AUGUST 16, 1951

IRON AGE

VOL. 168 NO. 7

CONTENTS

★Starred items are digested on opposite page.

EDITORIAL How Snoopy Can We Get? 7

NEWS OF INDUSTRY

Iron Age Introduces 84
Iron Age Salutes 85
★Scrap Allocations Could Weaken Initiative 119
★Tool Men Ask Halt to Labor Pirating 120
Freight Forwarding—Fast Growing Industry 121
Youngsten Seeks to Brighten Outlook 122
★Cuyahoga Called Vital Defense Project 123
Industrial Briefs 124
★Fast Writeoffs Lever for Plant Dispersal 125
Controls Digest and Subcontracting News 126
CMP Controls Planned for 2 Years 126
More Certificates of Necessity Approved 132
Construction Steel News 134
Clearing House 196

NEWS ANALYSIS

Newsfront 11
★Machine Tool Highspots 31
★On the Assembly Line 88
★West Coast Progress Report 93
★The Federal View 95

TECHNICAL ARTICLES

★How to Get the Most From Your Lathes, No. 1 97
Oil "Mist" Solves Lubrication Problem 101
★Repin Your Furnace Belts 102
High Velocity Burners, Part II 104
Handy Chart Correlates Rockwell C and Filar Units 107
Brass Powder Parts Aid Fuse Output 108
★Purchase for Performance 109
What is the Strength of Aluminum After Forming? 112
Stainless on Copper Halts Lithium Attack 114

MARKETS & PRICES

★The Iron Age Summary 15
Market Briefs and Bulletins 167
Nonferrous Metals Outlook 168
Iron and Steel Scrap Market 170
Iron and Steel Scrap Prices 172
Comparison of Prices 174
Steel Prices 176
Ferroalloy Prices 181

REGULAR DEPARTMENTS

Dear Editor 22
Fatigue Cracks 26
Dates to Remember 32
New Equipment 36
Free Publications 37

INDEX OF ADVERTISERS 212

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DIGEST

of the week in metalworking

CLOSED-END CMP BRINGS RUSH OF FILING

GE 5 Formal announcement of closed-end CMP has convinced the doubters in the consumer durable field, and y are rushing to file belated applications for fourth quarter el. Many in industry doubt that auto people will be able to d all the steel allotted them by NPA officials in Washington.

USE ALUMINUM, NOT COPPER, FOR RADIATORS

GE 8 A suggestion was despatched from Washington last week to the auto industry. Defense Mobilizer Wilson d the long-term outlook for copper was sad and that the tomakers should pin their hopes on aluminum—particularly for radiators. These radiators have been made in Europe.

NOT A SELLER'S MARKET ON WEST COAST

GE 9 A Dept. of Commerce survey and reports from the San Francisco Merchandise Mart show that business s year has slipped below 1950 levels in many lines. Western ns are feeling this softness. Some are cutting back output and ping for defense work. Yet they still clamor for steel, etc.

GOVERNMENT'S ROLLBACK PLANS FOUNDER

GE 5 Hopeful plans for ordering price rollbacks on machinery and many other manufactured products are idly being eased out of the picture. What was probably the t try by OPS to roll back factory prices foundered last week n about $2,500,000 in rollbacks were postponed indefinitely.

HOW TO GET THE MOST FROM YOUR LATHES

GE 7 Automatics and turret lathes are wonderful, but don't neglect the possibilities of engine lathes. There many special attachments and accessories which can be d to increase their versatility and production. The first a series of articles on lathe attachments and accessories.

SAVE MONEY, ALLOY: REPIN FURNACE BELTS

GE 2 About 90 pct of the alloy links in a furnace conveyer belt can be reused. Heat treat shops can take belts art, install new pins and have the furnace back in operaat little expense for parts and labor. The high cost a new belt and a long furnace downtime are eliminated.

PURCHASE FOR PERFORMANCE CUTS TROUBLE

PAGE 109 Common ordering and purchasing practice often leaves major areas of responsibility for performance of materials undefined. Unfortunate—and expensive—disagreements then arise between buyer and seller. More comprehensive, yet practical, approaches to buying practice are described.

SCRAP ALLOCATION COULD WEAKEN BUYING

PAGE 119 The controls-bound iron and steel scrap market may be susceptible to two shortage influences. One has inspired mills to get behind a renewed scrap drive. The other could take the vigor out of scrap procurement on the mill to broker level if the market surrenders to the allocations system.

SEEK STEPS AGAINST PIRATING OF LABOR

PAGE 120 Tool and die makers are still fighting hard to preserve their small but precious labor staff against assaults by new defense plants that can pay more and offer more benefits. They want standard wage ceilings slapped on various areas to establish a set of true and equal wage ceilings for all shops.

BIGGER SHIPS TO SAIL UP CUYAHOGA RIVER?

PAGE 123 Broadening of Cleveland's Cuyahoga River will permit bigger ships to carry bigger loads of iron ore and limestone to the area's steelmakers. Washington has been asked for $13,200,000 to broaden the river in some places, replace low bridges, and channeling. Tonnage shipped will then rise.

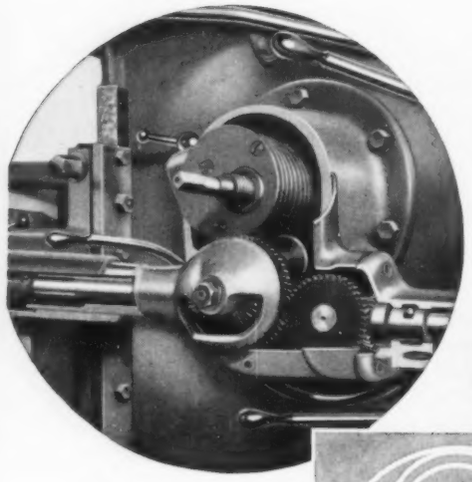
WRITEOFFS AS LEVER TO DISPERSE PLANTS

PAGE 125 Industries which fail to follow U. S. suggestions for plant dispersion may find it tougher getting fast tax writeoffs. The government reminded that Russia had touched off an atom bomb and that heavy air attack could sneak through our defenses. All the while, industrial areas grow heavier.

ALLOYED METAL POWDERS PROVE SUCCESSFUL

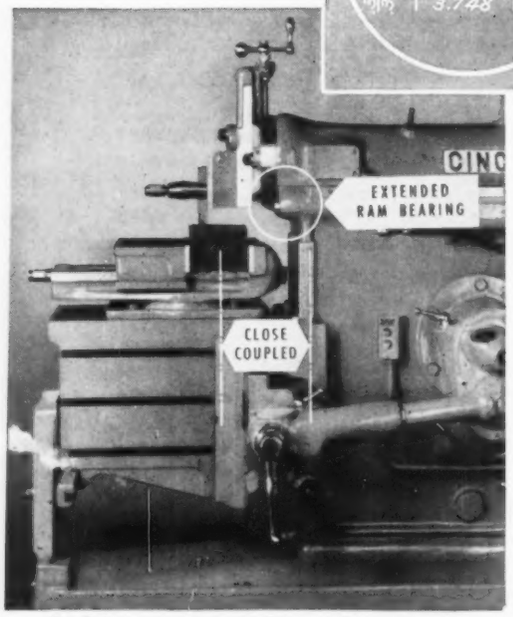
NEXT WEEK Powdered copper is pressed in dies used to form iron powder impeller blades for a waste disposer. Running the compacts through a continuous furnace together gives a density up to 97 pct with good ductility. Cyaniding gives tensile strength up to 90,000 psi, hardness up to 300 Bhn.

ACCURATE



Exclusive Cincinnati
Feed Mechanism

Shaping internal keyways to close limits.



Tool has cut seven inches, and ram has
not moved beyond bearing support.

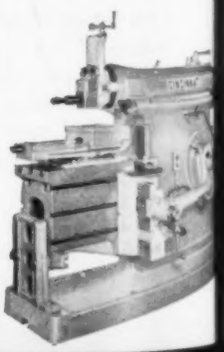
ACCURATE FEEDING

No bumps, no gaps in the feed on a Cincinnati Shaper. The unique feed mechanism, with a cam for each feed always in contact with the follower, maintains both accuracy and a superior finish to the work.

ACCURATE CUTTING

To further increase accuracy, a Cincinnati Shaper literally hugs the work. Extended ram bearings and full table clearance keep the work close to the column, reduce vibration and deflection, and consequent inaccuracies. A Cincinnati Shaper is the closest coupled shaper in the field.

For dependable, day in, day out accuracy, investigate a Cincinnati.



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THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

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How Snoopy Can We Get?

YEARS ago in Western Pennsylvania there used to be an expression "nebby nose." It was a label for those people who had a habit of sticking their noses into things that didn't concern them. Maybe we should resurrect that phrase.

In the past few years we have had more investigations by Congress than you can shake a stick at. Some of them have been noteworthy. Many others have been nothing but fishing expeditions or sounding boards for political pap—a gimmick to get newspaper space to "impress" the hometown voters.

The latest one takes the cake. It is the so-called investigation of baseball by a House Committee. Here we are in the midst of a defense program. The commies have us on the run in many corners. We have the highest tax bill in history. We are killing the goose that lays the golden egg.

We are trying to get strong so we can withstand the onslaught of Communism in all its various forms. Soldiers are dying in Korea and others who have gone to Europe may die for freedom. What do we have on the home front?

We have elected representatives of the people arguing over whether there should or shouldn't be more major leagues. We have long discourses on who hit the most home runs. We have a sounding board for people who have lost jobs in baseball.

We have Congressmen talking about baseball as if it were something that should be controlled. If the people weren't wrought up with taxes, casualties in Korea and their own plain business, they certainly would put a stop to the Washington baseball hearings.

These hearings are a symptom of "investigitus." Why not investigate how many men wear pajamas; how many sleep in the raw or how many use only tops or bottoms? That might be an interstate problem. Somehow it might be restraint of trade or have something to do with anti-trust. Who knows? You never can tell these days what's next.

We have threats to investigate dollar-a-year men. The news reads as if they were crooked to begin with: that they aren't capable of patriotism, so we must have an investigation to prove it. No wonder it is hard to get business people down to Washington to help out!

Yes, we better bring back the label "nebby nose" for those who can't mind their own business.

Tom Campbell

Editor

Advertisement

ELECTROMET Data Sheet

Published by Electro Metallurgical Company, A Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario.

ALLOYS FOR THE STEEL, IRON, AND NON-FERROUS INDUSTRIES

PRODUCT*	NOMINAL COMPOSITION	USES
BORON ALLOYS		
Ferroboron Min. 10.00% Boron Grade	Silicon.....max. 1.50% Aluminum.....max. 0.50% Carbon.....max. 1.50%	Increases hardenability of steel; also, for additions to malleable iron and aluminum alloys.
Min. 17.50% Boron Grade	Silicon.....max. 1.50% Aluminum....max. 0.50% Carbon.....max. 0.50%	
Manganese-Boron	Boron.....min. 17.50% Manganese...approx. 75% Silicon.....max. 1.50% Carbon.....max. 3% Iron.....max. 5%	Used to cleanse and deoxidize non-ferrous alloys.
Nickel-Boron	Boron.....15 to 18% Silicon.....max. 1.50% Aluminum.....max. 1.00% Carbon.....max. 0.50% Iron.....max. 3.00% Nickel.....Balance	Special boron alloy used principally for deoxidizing nickel and its alloys.
Boron Carbide	Boron.....45 to 50% Carbon .....45 to 50%	Deoxidizer for non-ferrous alloys.
Calcium Boride	Boron.....38 to 42% Calcium.....27 to 32% Carbon.....15 to 20%	Welding rod coating.
SILCAZ Alloy	Boron.....0.55 to 0.75% Silicon.....35 to 40% Calcium.....9 to 11% Aluminum.....6 to 8% Titanium.....9 to 11% Zirconium.....3 to 5%	A complex boron addition agent for increasing the hardenability of steel.
CALCIUM ALLOYS		
Calcium-Silicon	Calcium.....30 to 33% Silicon.....60 to 65% Iron.....1.50 to 3%	Deoxidizer for quality ingot steel. Also used in high-tensile gray irons.
Calcium-Manganese-Silicon	Calcium.....16 to 20% Manganese.....14 to 18% Silicon.....53 to 59%	A complex deoxidizer used widely in production of steel castings.
Calcium Metal		Reducing agent in metallurgical applications, deoxidizer and degasifier for non-ferrous metals, particularly magnesium.
Regular Grade	Calcium.....98% (Cylinders, Slabs, Cut Pieces, or Turnings)	
Distilled Grade	Calcium...approx. 99.90% (Irregular pieces from pea size to 14 in. lumps)	For special applications requiring calcium of very high purity.
CHROMIUM ALLOYS		
Low-Carbon Ferrochrome	Chromium.....67 to 71% Silicon.....0.30 to 1.00% Carbon (10 Grades) max. 0.03 to max. 2.00%	Production of stainless steels and high-temperature alloys requiring low carbon content.
High-Carbon Ferrochrome		
Max. 4.50, 5.00, or 6.00% Carbon Grade	Chromium.....67 to 70% Silicon..... 1 to 2%	For production of engineering alloy steels and other alloy steels of moderate chromium content.
Max. 7.00% Carbon Grade	Chromium.....66 to 69% Silicon..... 1 to 3%	
Min. 7.00% Carbon Grade	Chromium.....65 to 68% Silicon..... 1 to 3%	
Nitrogen-Bearing Low-Carbon Ferrochrome	Chromium.....67 to 71% Silicon.....0.30 to 1.00% Carbon.....max. 0.10% Nitrogen....approx. 0.75%	For additions of nitrogen to improve properties of high-chromium steels.
"SM" Ferrochrome	Chromium.....60 to 65% Silicon ..... 4 to 6% Carbon..... 4 to 6% Manganese..... 4 to 6%	A high-solubility chromium addition for steel or iron in either furnace or ladle.

PRODUCT*	NOMINAL COMPOSITION	USES
CHROMIUM ALLOYS cont.		
Foundry Ferrochrome High-Carbon Grade	Chromium.....62 to 66% Silicon..... 7 to 10% Carbon..... 5 to 7%	Developed especially for high-solubility [illegible] additions of chromium improve composition and properties of cast [illegible]
Low-Carbon Grade	Chromium.....50 to 54% Silicon.....28 to 32% Carbon.....max. 1.25%	
Chromium Metal Low-Carbon Grades	Chromium.....min. 97% Carbon .....max. 0.10% and 0.50% Iron.....max. 1%	Production of [illegible] variety of non-ferrous chromium-bearing alloys including electrical resistance alloys and high-temperature alloys.
High-Carbon Grade	Chromium.....87 to 90% Carbon..... 9 to 11% Iron.....max. 1.25%	
"EM" Ferrochrome-Silicon No. 1 Grade	Chromium.....39 to 41% Silicon.....42 to 46% Carbon.....max. 0.05%	In production of stainless steels, these alloys are used to reduce metal oxides from the slag back into bath.
No. 2 Grade	Chromium.....36 to 39% Silicon.....36 to 39% Carbon.....max. 0.05% Aluminum..... 7 to 9%	
"EM" Ferrosilicon-Chrome	Chromium.....50 to 54% Silicon.....28 to 32% Carbon.....max. 1.25%	For adding chromium and silicon to steels containing up to 1 or 2 per cent chromium.
"EM" Chromium Briquets (Hexagonal Shape)	Chromium.....2 lb. Total Weight.....3⅛ lb.	For adding chromium to cast iron in the cupola.
COLUMBIUM ALLOYS		
Ferrocolumbium	Columbium.....50 to 60% Silicon.....max. 8% Carbon.....max. 0.40%	Stabilizer in austenitic chromium-nickel stainless steels. Also constituent of high-temperature alloys.
Ferrotantalum-Columbium	Columbium...approx. 40% Tantalum.....approx. 20% Cb+Ta .....min. 60% Silicon.....4 to 6% Carbon.....max. 0.30%	Another stabilizer, used to supplement ferrocolumbium, in austenitic chromium-nickel stainless steels. Also used in high-temperature alloys.
MANGANESE ALLOYS		
Standard Ferromanganese Regular Grade	Manganese.....78 to 82% Carbon.....approx. 7% Silicon.....max. 1%	Most common means of adding manganese to steel for both alloying and deoxidizing purposes. Also for counteracting sulphur in steel and cast iron.
Low-Phosphorus Grade	Manganese.....78 to 82% Carbon.....max. 7% Silicon.....max. 2% Phosphorus...max. 0.10%	
Low-Carbon Ferromanganese Low-Phosphorus Grade	Manganese.....min. 90% Carbon.....max. 0.07% Phosphorus...max. 0.06%	Additions of manganese to steels of low-carbon specification, particularly stainless steels of 18 per cent chromium, 8 per cent nickel type.
Regular Grades	Manganese.....85 to 90% Carbon ....max. 0.07, 0.11 to 0.15, 0.30, or 0.50%	
Regular Grade (High-Silicon)	Manganese.....80 to 85% Carbon.....max. 0.75% Silicon..... 5 to 7%	
Medium-Carbon Ferromanganese	Manganese.....80 to 85% Carbon.....max. 1.25 to 1.50%	For making low- and medium-carbon manganese steel and Hadfield steel.
Silicomanganese		
Max. 1.50% Carbon Grade	Manganese.....65 to 68% Silicon.....18 to 20%	A versatile alloy used as furnace block, deoxidizer, and also for making manganese additions to steel in the ladle or in the furnace.
Max. 2.00% Carbon Grade	Manganese.....65 to 68% Silicon.....15 to 17.50%	
Max. 3.00% Carbon Grade	Manganese.....65 to 68% Silicon.....12 to 14.50%	

*All of the alloys and metals listed are produced in the usual lump, crushed, or ground sizes, except where other special forms are indicated.

PRODUCT*	NOMINAL COMPOSITION	USES
MANGANESE ALLOYS cont.		
Low-Iron Ferromanganese	Manganese.....85 to 90% Carbon.....approx. 7.00% Silicon.....max. 3% Iron.....max. 2%	For high manganese additions to certain non-ferrous alloys, particularly aluminum.
Manganese Metal	Manganese.....min. 96% Carbon.....max. 0.20% Silicon.....max. 1.00% Iron.....max. 2.50%	Used both as deoxidizer and alloy in production of numerous non-ferrous metals and alloys.
"SM" Silico-Manganese Briquets (Square Shape)	Manganese.....2 lb. Silicon.....½ lb. Total Weight.....3½ lb.	For adding manganese (with silicon) to cast iron in the cupola.
"EM" Ferro-Manganese Briquets (Oblong Shape)	Manganese.....2 lb. Total Weight.....3 lb.	For adding manganese (without silicon) to cast iron in the cupola.
SILICON ALLOYS		
50% Ferrosilicon		Deoxidizer for most grades of killed or semi-killed steel; also a good blocking agent.
Regular Grade	Silicon.....47 to 51%	
Low-Aluminum Grade	Silicon.....47 to 51% Aluminum.....max. 0.40%	
65% Ferrosilicon		Mainly for production of electrical sheet steel.
Low-Aluminum Grade	Silicon....61.50 to 66.50% Aluminum.....max. 0.50%	
75% Ferrosilicon		Deoxidizer and alloy for production of high-silicon spring and electrical sheet steel. Graphitizing inoculant for cast iron.
Regular Grade	Silicon.....73 to 78%	
Low-Aluminum Grade	Silicon.....73 to 78% Aluminum.....max. 0.50%	
85% Ferrosilicon		Enables melter to add higher percentages of silicon without chilling metal in ladle. Graphitizing inoculant for cast iron.
Regular Grade	Silicon.....83 to 88%	
Low-Aluminum Grade	Silicon.....83 to 88% Aluminum.....max. 0.50%	
90% Ferrosilicon		Permits large additions of silicon without harmful chilling effect.
Regular Grade	Silicon.....92 to 95%	
Low-Aluminum Grade	Silicon.....92 to 95% Aluminum.....max. 0.50%	
Silicon Metal		Additions of silicon to non-ferrous metals, particularly aluminum and copper, to improve physical properties.
Regular Grade	Silicon.....min. 97 or 96% Iron.....max. 1 or 2%	
Purified Grade	Silicon....99.70 to 99.90% Iron.....005 to .015%	For applications in non-ferrous industry requiring silicon of high purity.
Low-Calcium Grade	Silicon.....min. 97% Iron.....max. 1% Calcium.....max. 0.10%	For the production of high-silicon aluminum alloys where calcium is detrimental.
Low-Aluminum Grade	Silicon.....min. 98% Iron.....max. 1% Aluminum.....max. 0.10%	For the production of silicon-copper alloys where aluminum is detrimental.
"SMZ" Alloy	Silicon.....60 to 65% Manganese..... 5 to 7% Zirconium..... 5 to 7%	Particularly strong graphitizing inoculant used in making ladle additions to cast iron.
Special Graphitizer	Ferrosilicon Compound	Acts as both deoxidizer and graphitizer in cast iron. Useful in controlling chilling tendencies.
Magnesium-Ferrosilicon	Silicon.....approx. 46% Magnesium..approx. 8.5%	For ladle addition to cast iron to obtain special properties.
Barium-Silicon	Barium.....40 to 50% Silicon.....45 to 55%	For deoxidation of non-ferrous alloys.
"EM" Silicon Briquets (Cylindrical Shape)		
Large Size	Silicon.....2 lb. Total Weight.....5 lb.	For adding silicon to cast iron in the cupola.
Small Size	Silicon.....1 lb. Total Weight.....2½ lb.	

"Electromet," "EM," "Silcaz," "SM," and "SMZ," are trade-marks of Union Carbide and Carbon Corporation.

PRODUCT*	NOMINAL COMPOSITION	USES
TITANIUM ALLOYS		
Ferrotitanium	Titanium.....27 to 32% Carbon.....max. 0.10%	For adding titanium to stabilized austenitic chromium-nickel stainless steels and to high-temperature metals.
Silicon-Titanium	Titanium.....40 to 50% Silicon.....45 to 50% Iron.....max. 3%	For additions of titanium to steels or non-ferrous alloys.
Manganese-Nickel-Titanium	Titanium.....43 to 48% Nickel.....approx. 25% Manganese.....max. 8% Aluminum.....max. 18% Iron.....max. 5% Silicon.....approx. 2% Carbon.....max. 0.15%	Deoxidization of nickel alloys.
TUNGSTEN ALLOYS		
Ferrotungsten	Conforming to A.S.T.M. Spec. A 144-39	For production of tool and die steels; also high-temperature alloys.
Tungsten Metal Powder		Production of tungsten steels and cast tungsten carbide.
Melting Grade	Tungsten.....min. 98.80% Total Carbon..max. 0.25%	
VANADIUM ALLOYS		
Ferrovanadium	Vanadium.....50 to 55% Carbon....max. 0.20, 0.50, or 3.00% Silicon....max. 1.50, 2.00, or 8%	Production of tool and engineering steels, high-strength structural steels, non-aging rimming steels, and wear-resistant irons.
Vanadium Oxide Fused	V_2O_5.....86 to 89% Na_2O.....approx. 10% CaO.....approx. 2%	For addition of vanadium to steel and for manufacturing catalysts.
Sodium Polyvanadate (Red Cake)	V_2O_5.....approx. 85% Na_2O.....approx. 9% CaO.....approx. 2% H_2O.....approx. 2.5%	For manufacture of vanadium compounds, including vanadium catalysts.
High-Purity Ammonium Metavanadate	V_2O_5.....approx. 99.50% NH_4VO_3.....min. 99%	
ZIRCONIUM ALLOYS		
12 to 15% Zirconium Alloy	Zirconium.....12 to 15% Silicon.....39 to 43% Carbon.....max. 0.20%	This zirconium alloy is a powerful deoxidizer. It also increases depth of hardening.
35 to 40% Zirconium Alloy	Zirconium.....35 to 40% Silicon.....47 to 52% Carbon.....max. 0.50%	Deoxidizer for fine grades of alloy steels. Used for adding larger amounts of zirconium.
Nickel-Zirconium	Zirconium.....25 to 30% Nickel.....40 to 50% Aluminum....approx. 15% Silicon.....max. 10% Iron.....max. 5%	Effective for deoxidizing and degasifying nickel and its alloys.

IF YOU HAVE A METALS PROBLEM

More than 50 different alloys and metals are produced by ELECTROMET in hundreds of varying compositions and sizes. If you need help in selecting the proper alloys, or have some specific metallurgical problem, be sure to consult one of ELECTROMET'S specially trained metallurgists and engineers. Address your inquiries to one of the offices listed below.

Birmingham 3, Ala.....Brown-Marx Building
Chicago 1, Ill.....230 N. Michigan Avenue
Cleveland 14, Ohio.....Union Commerce Building
Detroit 2, Mich.....6-240 General Motors Building
Los Angeles 58, Calif.....2724 Leonis Boulevard
New York 17, N. Y.....30 East 42nd Street
Pittsburgh 22, Pa.....2207 Oliver Building
San Francisco 6, Calif.....22 Battery Street
In Canada: Electro Metallurgical Company of Canada Limited, Welland, Ontario

Are you turning in all your SCRAP?

Don't wait for "George" to do it

IF you are a steel user, this important job of getting more scrap back to the mills is directly up to *you*. You just cannot afford to sit idly by while the scrap shortage gets worse. For unless everyone really pitches into this job of digging out all the scrap possible, steel production is bound to suffer, and every steel user, in more or less degree, will suffer too.

More scrap means *more* steel—it's as simple as that.

Right now some mills have only a bare two-days' supply of scrap on hand. Others have even less. Some steel-making furnaces already have had to shut down for lack of scrap. The situation is serious. Only you can help improve it.

By turning in every piece of worn-out equipment, every obsolete tool and machine, in fact every pound of iron and steel scrap you can comb out of your plant, you'll be helping relieve the worst scrap shortage since Pearl Harbor days . . . and the steel industry will be able to produce more of the steel you need.

Remember—it takes at least one-half ton of scrap to make one ton of steel. To maintain steel's present high production schedules requires more than 1400 carloads of industrial scrap *every* day. So turn in your scrap—ALL your scrap—and keep the mills rolling. This is more than a shortage. It's an emergency that vitally concerns you—and us—and the Nation.

You'll find your local scrap dealers listed in the yellow pages of the phone directory.

USS TRADE MARK

1-1348-A

This page would ordinarily be used to tell you about

OUR STEEL WAREHOUSE SERVICE

but, because steel cannot be produced without SCRAP, we are asking instead for your all-out help in getting more SCRAP to the mills.

UNITED STATES STEEL SUPPLY COMPANY
WAREHOUSES COAST-TO-COAST

UNITED STATES STEEL

IRON AGE *newsfront*

news methods and product forecast

► Keep an eye on ceramics as a possible partial solution for the critical alloy shortage. Some authorities feel that progress in this direction offers a good possibility--perhaps equal to boron--of relieving the pressure on constructional, high temperature and stainless steel alloys.

► Long term supply outlook for copper is not nearly as bright as it is for steel and aluminum. Raw material and processing capacity for the latter metals is being rapidly expanded but even Washington planners don't think it physically possible to get a proportional expansion in copper.

Government efforts to speed research on aluminum as a substitute for copper in automotive radiators has been anticipated; they are used in Europe. Several U. S. manufacturers are now fairly well advanced on copper-substitute research.

► Use of "homemade" sales movies is increasing in industry. One machine tool company makes 20-min. sound films for less than $5000. Best results come from selling a specific machine--rather than trying to sell the whole line.

► One auto manufacturer operating an extensive and profitable scrap collecting system provides more than half the aluminum needed for its pistons.

► Little publicized but growing more serious every day is the jam in large dies. The government is fostering use of very large forging dies but facilities are inadequate to handle much big work. Captive shops are tied up on their own dies and there are only two or three commercial shops in the U. S. able to make very large dies.

► First public demonstration of electronics applied to weighing (in 1939) caused some raised eyebrows among scale manufacturers. Today at least one scale company is in commercial production on electronic weighers. Its equipment weighs hot-metal ladles on cranes or on cars, weighs castings, etc.

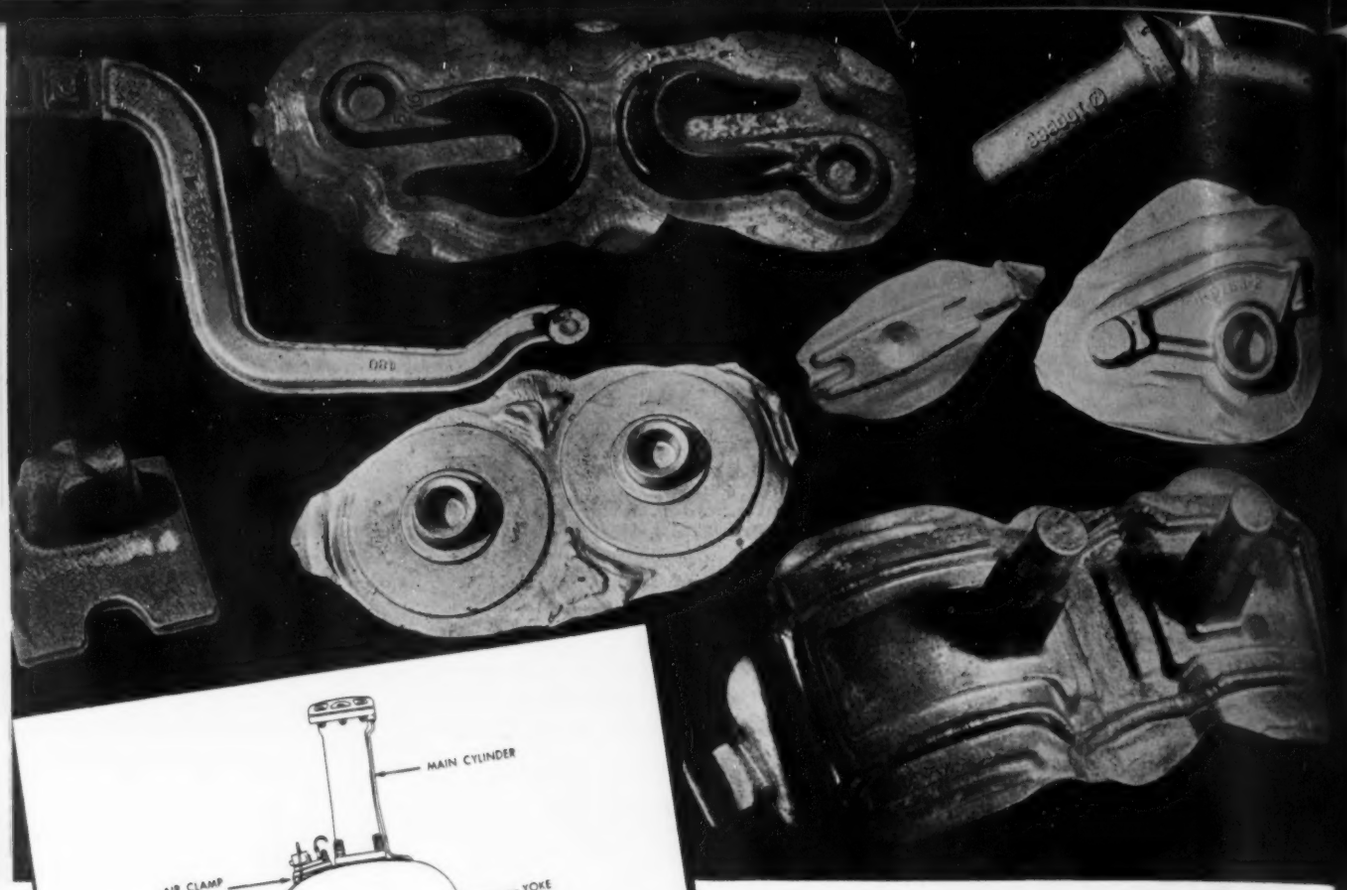
There is a trend to electronic weighing of objects in motion. The largest job now in the engineering stage will handle moving freight cars.

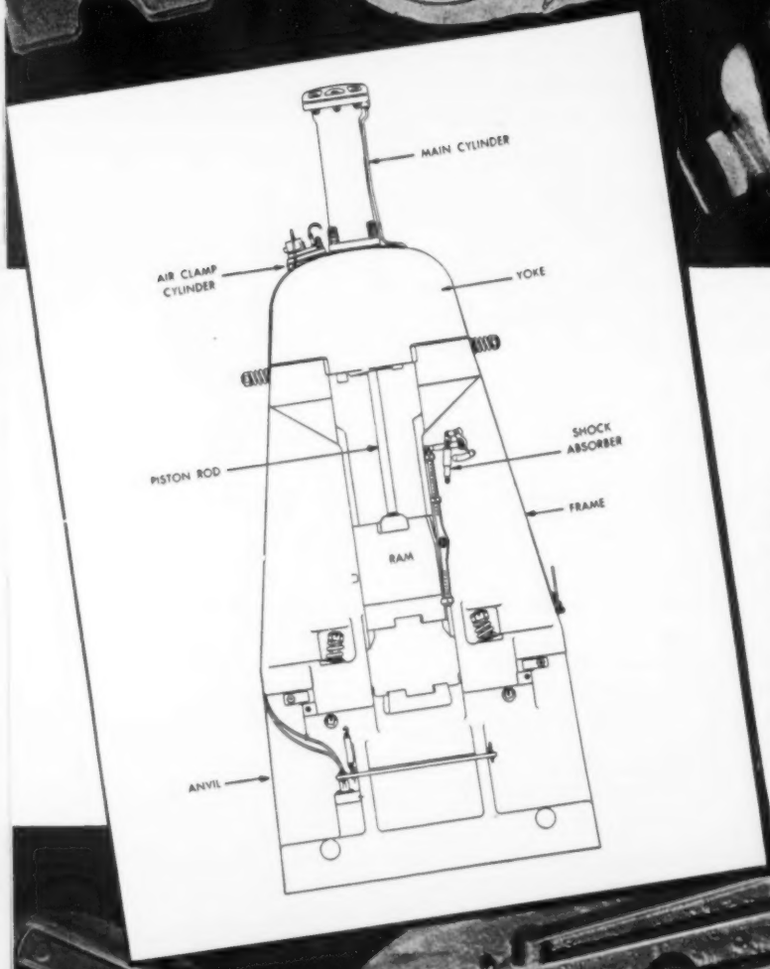
► Many automotive engineers now believe that in a free economy and at existing prices, aluminum will eventually replace steel for a number of automobile parts. Labor savings in the latest diecasting techniques will more than offset aluminum's higher first cost, they argue.

A diecast aluminum engine for a small car is now a probability. Research by at least one car maker is already far advanced on such a project.

► An electrolytic grinding method now being developed promises to eliminate the need for industrial diamonds on many jobs. Industrial diamonds have soared from about $2 to about $5 a carat since the start of the war. Brokers still holding them for a further price rise may wind up getting stuck.

► A number of consumer durable goods manufacturers who failed to file for fourth quarter metal requirements under CMP are going to be in a bad spot. Applications received after Aug. 15 are not being processed.





MANY FORGINGS CAN BE MADE FASTER, CHEAPER, MORE ACCURATELY ON THE CECO-DROP

The rapid striking action of the Ceco-Drop, the quick get-away of the ram after striking and the low center of gravity, insuring accuracy of die match, are a few of the reasons why forgings like these have shown increased production, more uniform accuracy and lower cost when transferred from other gravity drop hammers to Ceco-Drops. *Write for Bulletin 11-*

CECO-DROP

The Boardless Gravity Drop Hammer

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

IRON AGE *summary*

iron and steel industry trends

Fourth quarter seen most critical . . . Who gets conversion? . . . Plan 2 years of controls . . . Super priority rumors still flying fast.

Peak of Frustration—The fourth arter will probably be the most itical period in the entire mo- lization program for steelmakers d controls officials. During that eriod they will reap the peak f frustration from an oversub- ribed steel market.

After that, demand will be just strong, or stronger, but many f the tangles in the Controlled aterials Plan will have been un- arled. At least that's the bright ope harried executives and ad- inistrators are pointing out to nsumers now. The steel user's roblems won't be solved early ext year either, but he should ave a pretty good idea where he ands, what he can do and what e can't do.

Great Leveler—Inclusion in the ewly announced closed-end CMP on't mean more steel for manu- cturers of consumer durables. hey'll probably get less. They are e last to be given checks on the el bank. And they'll be compet- g with a lot of unhonored CMP ecks still held by other con- mers.

CMP is expected to act as a sort leveler among makers of autos d appliances. It should provide ch firm a more equitable share of whatever steel is available for ese industries—than would re- lt from procurement battles in igidly restricted "free" market. Big companies will likely get less, and the little ones more.

Who Gets Conversion?—During the past week there has been a rush by these manufacturers to file fourth quarter applications for controlled materials. Formal announcement of closed-end CMP was as clear as handwriting on the wall to them: Regardless of personal desire, it would become increasingly hard, and finally impossible, to operate without CMP tickets.

Most firms who have been getting part of their steel through conversion arrangements expect to continue doing this as long as possible. But ingot sources have been drying up during recent weeks. A big question now is what will happen to conversion under total CMP? Obviously, no one will want to receive his allotment in this high-priced steel. All will want their allotments to be regular mill tonnage at regular market prices.

Let 'Er Roll—Thirty-two steel companies representing 94 pct of industry capacity have received their production directives for September. Excepting for minor details, these directives are final. Directives for other producers will be worked out later.

Tentative directives for the fourth quarter have been worked up, and producers have been asked to estimate their production in the first quarter of 1952.

Super Priorities? — One thing worrying the mills is that once they have their rolling schedules set up they will be disrupted by issuance of too many overriding directives. These fears are intensified by recurring rumors of super priorities for CMP materials (Washington denies them). Mills can always accommodate some directed tonnage. But if directives become too frequent or too large they will throw production schedules out of kilter.

How Long Controls?—Present thinking in Washington is that controls may last 2 more years. This is hard for industry to appreciate, in view of the huge expansions of basic productive capacity already well under way. Washington officials do point out that controls may be lifted product by product instead of all at once. For example, they point out that demand for cold-rolled sheets may ease off much quicker than structurals or bars, which are highly oversubscribed in a mobilizing economy.

Steelmaking operations this week are scheduled at 101.5 pct of rated capacity, unchanged from the previous week.

(Nonferrous summary, p. 168)

26 MILLION TONS of steel scrap "ain't hay"

IT took 57,000 tons of steel to build the Empire State Building in New York. That's about one-tenth of one percent of the tonnage of scrap required to produce the new steel demanded for America's defense and civilian needs this year.

Half of this scrap is produced by the steel mills themselves. The other half - approximately 26 million tons - must be supplied by the public. That tremendous tonnage is the equivalent of 461 Empire State Buildings - over 1400 carloads of scrap every day of the year.

Right now there is a scrap shortage. It threatens to interfere with steel production. So we appeal to you, as a user of steel and steel products, to do all you can personally to help collect scrap.

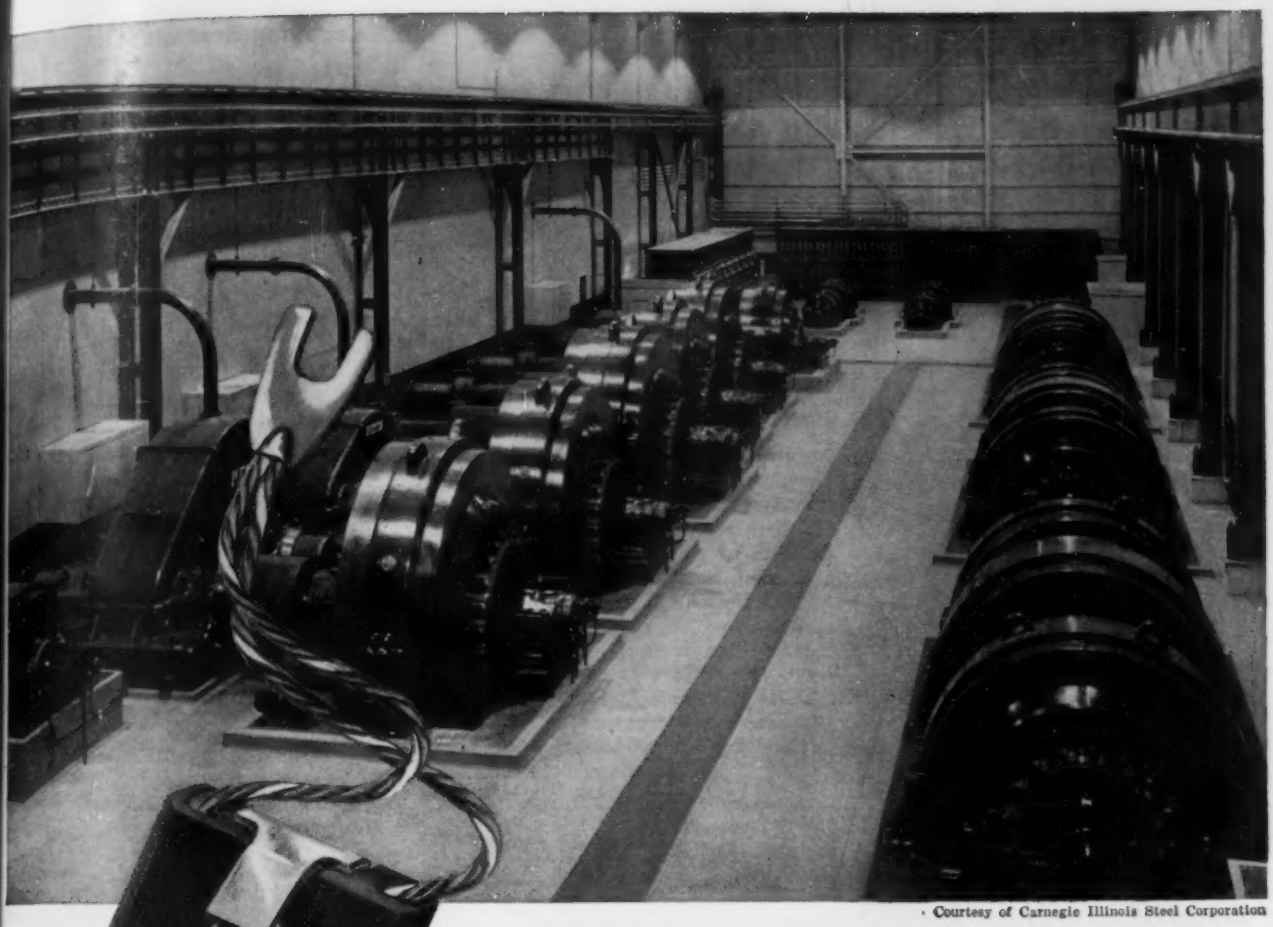
Somewhere in your place of business - and even at home - there are things that can be scrapped - worn-out or obsolete machines, pipe, boilers, tools, structural parts, etc., that you'll never use again in their present form. Turn them in through regular channels. Call the nearest dealer and start your scrap on its way to the steel mills - to help America reach its production goal of 105 million tons of new steel in 1951. It is this team-work that will help us win the victory again.

YOUR SCRAP YOUNGSTOWN IS NEEDED

The Youngstown Sheet and Tube Company

General Offices -- Youngstown 1, Ohio
Export Offices -- 500 Fifth Avenue, New York
MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

The steel industry is using all its resources to produce more steel, but it needs your help and needs it now. Turn in your scrap, through your regular sources, at the earliest possible moment.



· Courtesy of Carnegie Illinois Steel Corporation

KEEP PRODUCTION ROLLING WITH SA 35!

The NATIONAL standardized brush for main-drive motors

TRADE-MARK

Main-drive motors and generators are the most important machines in the mill. If one of them fails, production stops dead. Tons of steel may be held up. It doesn't pay to take chances with the brushes on this vital equipment.

Here's why "National" SA-Series grades lead the field on main-drive equipment:

- Complete dependability, proved in service for many years
- Closely controlled commutation factor
- Minimum commutator wear
- Long life
- Low flat price, for one box or 10,000 boxes
- Unequalled uniformity

STANDARDIZED BRUSHES FOR MAIN-DRIVE MOTORS AND GENERATORS

NC NUMBER	SPECIFICATIONS	APPLICATIONS
NC 12-5610	2½ x 1¾ x ⅜ Grade SA-35	For Westinghouse Tandem Holders
NC 16-5603	2½ x 1¾ x ½ Grade SA-35	For Westinghouse Tandem Holders
NC 12-4802	2¼ x 1½ x ⅜ Grade SA-35	For "Toe-to-Toe" Holders
NC 16-4804	2¼ x 1½ x ½ Grade SA-35	For "Toe-to-Toe" Holders

Order by NC Number

FOR COMPLETE INFORMATION on National Carbon's brush standardization program and the advantages it offers, write to National Carbon Company, A Division of Union Carbide and Carbon Corporation, Dept. IS.

The term "National" and the Three Pyramids Device are registered trade-marks of Union Carbide and Carbon Corporation

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District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

IN CANADA: National Carbon Limited, Montreal, Toronto, Winnipeg

is spring steel up your alley?

. . . ours too

Pictured is just one of the aisles in Kenilworth's specialized spring steel stock department; here you see a portion of the wide variety of types, sizes and finishes (annealed or tempered) always on hand. Whatever your requirements, however small, Kenilworth can handle your orders quickly. You are assured of uniform end results plus Kenilworth's accurate meeting of specifications in shipment after shipment. Your inquiries are invited.

THE Kenilworth Steel co.

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Dear EDITOR

letters from readers

Medalist

Sir:

In the name of the Venezuelan Government, I am sending you by separate mail a bronze medal, commemorative of the re-dedication of the statue of Simon Bolivar, which took place on the 19th of April in the new Plaza Bolivar at the head of the Avenue of the Americas, New York City.

The Venezuelan Government wishes you to accept this medal as a token of its high esteem and consideration and as a symbol of inter-American friendship and understanding.

A. DAVILA-DELGADO
Consul General
Estados Unidos De Venezuela
New York

ECA Thanks

Sir:

The Economic Cooperation Administration and its Technical Assistance Division wish to take this opportunity to express to you and your associates their appreciation and thanks for the whole-hearted cooperation, hospitality, and unselfish giving of your time and experience to the group of French steel industry men who have completed their visit here in America.

Their comments before leaving for France were most gratifying and we feel that it was only such cooperation and assistance as your organization gave that made this group's visit one of the most successful undertakings to assist European recovery and to fulfill the principles of the Marshall Plan.

M. H. PRANG
Productivity & Technical Assistance Div.
Economic Cooperation Administration
Washington

Correction

Sir:

In our article "Effect of Structure on Machinability Demonstrated" which appeared in THE IRON AGE of August 2, 1951, you have our company, Metcut Research, erroneously listed as located in Cleveland, Ohio. That address should be Cincinnati, Ohio.

Will you please make the necessary corrections?

NORMAN ZLATIN
Partner
Metcut Research Associates
Cincinnati, Ohio

Readying Reprints

Sir:

When reprints of your boron steel articles are available, please send a half dozen copies, together with your bill, marked for the attention of the undersigned.

T. V. BUSH
Advertising Manager
Farrell-Birmingham Co.
Ansonia, Conn.

Sir:

The Armory requests two copies (tear sheets) of the articles on "Boron Steels" which appear in the 5 July, 12 July and 19 July issues of IRON AGE.

FOR THE COMMANDING OFFICER:
JOHN M. PAYNE
Assistant
Ordnance Corps
Springfield Armory
Springfield 1, Mass.

We are now reprinting the boron steel series in a 32-page booklet which will be ready for distribution by Sept. 1. Single copies are 50¢ each, or three copies for $1.00. Price for 6 to 99 copies is 25¢ each. Address Reader Service Dept., The Iron Age.—Ed.

Clarification

Sir:

I am interested in communicating with the writer of the letter published on page 24, issue of July 19, under the heading "Virginia Bessemer?"

A letter addressed to "Mr. L. M. Lee, President, Virginia Manganese Corp., Richmond, Va.," has been returned by the post-office stamped "Insufficient Address."

H. E. TOMLINSON
Tomlinson & Co.
Philadelphia

The complete address of Virginia Manganese Corp. is 302 Atlantic Life Bldg., Richmond 19, Va.—Ed.

Thank You

Sir:

Confirming our telephone conversation we wish to thank you for giving us the name of Hoern & Dilts, Inc., 920 Rush St., Saginaw, Mich., as the company referred to in your article "Two Sizes of Gear Blanks Machined Simultaneously," on page 101 of the July 12th issue.

WM. E. McCORMACK
Marbaix, Inc.
New York

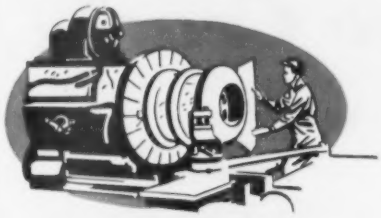
Wire

PLEASE RUSH 400 COPIES JULY 12TH IRON AGE ARTICLE "HOW GOOD A HOUSEKEEPER ARE YOU?

JOHN R. HUNTLEY
Director of Personnel
Granite City Steel Co.

"It ain't the individual nor the army as a whole
But the everlastin' teamwork of every bloomin' soul."

Excerpt from "Cooperation"
by J. Mason Knox



When a contract is awarded to Heyl & Patterson for Heavy Bulk Materials Handling Equipment every member of the H & P organization "Gets Into the Act."

Heyl & Patterson's ability to do the WHOLE JOB, *with their own forces,* All The Way from Design to Erection until the apparatus is performing satisfactorily, has earned the respect and confidence of our customers in the Mining, Steel, Power, Railroad and Aluminum industries.

Heyl & Patterson can guarantee "*CONTROLLED QUALITY*" because we have *OUR OWN* Engineering Department, *OUR OWN* Fabricating Plant and *OUR OWN* Erection Department.

Since 1887 the economic value of H & P "*CONTROLLED QUALITY*" has been demonstrated by the performance records of Heavy Bulk Materials Handling Equipment, designed, fabricated and erected by Heyl & Patterson.

Every *NEW* Contract is a *NEW* Challenge not only to H & P Engineers but to every person in our fabricating Plant and in our Erection Department.

The *WHOLE JOB HAS TO BE RIGHT.* This is the H & P Policy that governs every step of the way from the first consultation with a customer until the *WHOLE JOB IS IN SUCCESSFUL OPERATION.*

Ore Bridges
Railroad Car Dumpers
High Lift-Turnover-Rotary
Coal Preparation Plants
Coal & Coke Handling Equipment

Boat Loaders and Unloaders
Rotary Mine Car Dumpers
Coal Crushers
Coal Storage Bridges
Car Hauls and Boat Movers

Bradford Breakers
Refuse Disposal Cars
Thorsten Coal Sampling Systems
Kinney Car Unloaders

Pig Iron Casting Machines
Cyclone Thickeners
Thermal Dryers
The Drying Dutchman
Reineveld Centrifugal Dryer

Heyl & Patterson, Inc.
"SINCE 1887"

Heavy Bulk Materials Handling Equipment
All The Way from Design to Erection

55 WATER STREET · PITTSBURGH 22, PA.

Lapping Carbide 20% Faster!

Carbide spray nozzle orifices are finished to tolerances of .0005" at Spraying Systems Company, Bellwood, Illinois. New Elgin DYMO-C diamond abrasive used in place of diamond powder-oil mixture produces more pieces per hour and conserves diamond, too!

ELGIN DYMO-C*

diamond abrasives

*C FOR CARBIDE

Here is a complete new diamond abrasive specially prepared to speed carbide finishing operations. It cuts faster, won't work back on the lap, won't settle and comes ready to use without time-consuming mixing. Write for complete information—ask for a free demonstration.

ALL ELGIN DIAMOND ABRASIVES ARE COMPLETELY PRODUCED BY ELGIN AND CERTIFIED TO CONFORM TO U. S. BUREAU OF STANDARDS SPECIFICATIONS.

ABRASIVES DIVISION

ELGIN NATIONAL WATCH CO.

ELGIN, ILLINOIS

Fatigue Cracks

by Charles T. Post

Better Days Ahead

Tom Scott, who has come to expect almost anything as your favorite family journal's subscription representative in Michigan, reports that the Opportunity Manufacturing Co. of Saginaw, Mich., is a manufacturer of caskets and burial vaults.

Opportunity? We'd call it almost a sure thing.

Mulberry Bush

When the machine tool builder's secretary picked up the phone, the voice on the other end of the line said the call was urgent. Like a good Girl Friday she had it switched down to the shop where the m.t.b. was unhappily bidding goodbye to a couple of hard-to-replace old-timers who had quit to get higher pay at a new defense plant in town.

Naturally, the call was from the defense plant. They wanted to know why delivery was so slow on the machine tools they had ordered.

Summer Lull

We're thinking of making a survey to find out why people never seem to look for jobs during the summer. For a month now the editorial department has been looking for a junior editor to fill a spot on the news staff. They've had some applicants, of course. But the editor is particular. Wants a young man with a good technical background, one who knows what makes the wheels go 'round in industry. At the same time he's got to be able to write clearly and briefly, and to cull the chaff. He must be able to meet people and have the kind of personality that makes friends. Well, we've found them before and usually they move on up the line, so perhaps we'll skip the survey. Soon as the hot weather ends there'll be plenty.

Fiat Lux

Our aptronym scouts report that T. H. Light works, naturally, for the Public Service Electric & Gas Co. of New Jersey.

Puzzlers

The bottle in last week's puzzler cost $1.02½ which we felt was too much for an empty bottle.

The number problem has many answers in addition to the one we printed last week. Some of the many solutions were submitted by C. E. Blass, Talon, Inc., C. G. Heilman, Commonwealth Industries, Inc., R. L. Cole, The Ohio Steel & Supply Co., R. W. Huff, Canton, Ohio, and L. F. Calzi, Philadelphia.

H. L. Ludwig, U. S. Steel Export Co., brought this one back from his vacation.

Four frogs were at the bottom of a 30 foot well and all started their effort to get out at the same moment.

The first frog "A" would jump up 3 feet and fall back 2 feet at each jump. The second frog "B" would jump up 4 feet and would fall back 3½ feet, but being a nervous individual he jumped twice as often per minute as the first frog. The third frog "C" was a big fellow who could jump 6 feet at a time but would fall back four feet; also he was lazy and jumped only half as often as the first frog. The fourth frog "D" was a technician and he jumped up only one foot at a time without falling back; he jumped at the same rate as the first frog.

What was the order in which they emerged from the well?

machine tool high spots

sales inquiries and production

by George Elwers

Snub Continues—The price control sections of the new Defense Production Act, as written by Congress and interpreted by OPS, reflect either deliberate ignoring of, or lack of understanding of, the particular problems of the machine tool industry. Much damage has already been done.

Lack of understanding seems hardly possible, since the industry has for months been telling its story patiently to whoever in Washington would listen.

Root of the problem is the original general price freeze, the GCPR, which froze prices at those established on machines sold or available for sale in the period Jan. 1 to June 24, 1950.

Not Quoted Prices — In effect, this stuck the machine tool industry with the prices on machines it delivered during that period, not the prices it was quoting then. The spread between delivered and quoted prices at that time was, for most builders, quite large. Post-war depressed sales conditions had made it impractical to raise prices to keep up with advancing costs.

Some builders had not raised prices for many months when the freeze hit, and few had raised them as much as their costs had risen. But even assuming that builders had raised prices right along to keep pace with costs, the freeze would still have been unfair.

Still Stuck—It stuck the builder with the costs which occurred after prices on machines to be delivered between Jan. 1 and June 24, 1950, had been quoted. This lead time, on most machine tools, amounts to several months.

Now the new price law allows ceilings which reflect cost increases occurring between the 1950 freeze period and July 26, 1951. But the machine tool builder is still stuck with the cost increases prior to the freeze period which, as explained above, were not reflected in his prices on machines delivered during the freeze period.

Waiting for OPS—The industry has asked that it be permitted to utilize in computing ceiling prices, quoted prices, rather than delivered prices, in effect during the freeze period.

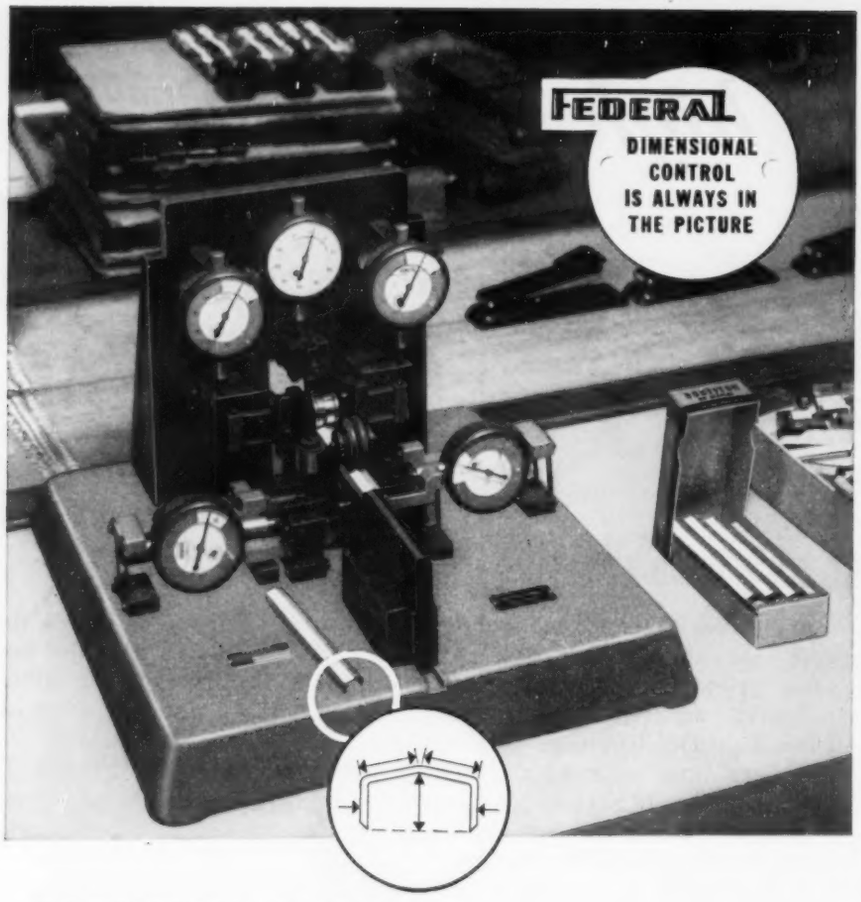
Aside from this glaring defect, the industry generally feels that the current prices controls give the industry a better pricing climate than it has had since the freeze — provided OPS doesn't gum up the works.

So far, despite the clear intent of Congress and Mobilizer Wilson's direct order to grant the machine tool industry suitable price relief, OPS seems to be dragging its feet.

Indefinite Delay — If ceiling price computations made in accordance with CPR 30 result in an increase over GCPR prices, the new ceiling cannot be put into effect for 15 days after filing. During these 15 days, if OPS requests further information or wishes to question anything in the computations, then the price increase cannot be made until after the point OPS raises is settled.

Thus, in effect, OPS can prevent any price increases in the machine tool industry indefinitely. Builders are grimly waiting to see how many price increases OPS will question, and how long it will stall in settling the questions it raises. Action under the Capehart Amendment which permits inclusion of cost rises up to July 26 awaits the pleasure of OPS.

Name Calling Target—It is fast becoming a popular sport to call the machine tool industry a defense bottleneck. Those who do, like to cite the approximate 22-month backlog of orders, which is still rising. This figure is not quite so alarming as the industry's detractors assume, however. It must be realized that not all these machines are needed immediately. True, at current production rates it might take 2 to 3 years to deliver all the machines now on order. What the alarmists forget, though, is that a good many of these machines are actually not needed, nor intended to be delivered, for 2 or 3 years.

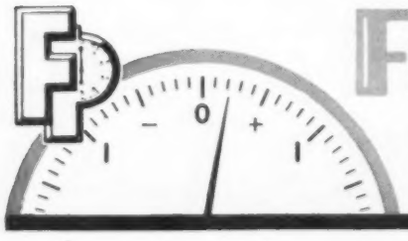


PRECISION GAGING BUILDS GOODWILL FOR WIRE STAPLES

Another industry served by Federal Gages

Satisfactory performance in a stapling machine depends to a large extent on the precision manufacture of the staples. By frequent and continuous gaging of all sizes and types of staples, Bostitch makes sure that the staples bearing its name will feed freely and easily without clogging or jamming and its machines will give uninterrupted and satisfactory service. This is how Federal Gages help Bostitch build customer goodwill whenever their staples are used.

Federal Gages are goodwill builders for industries of all types. Countless products, even those you wouldn't suppose at first glance to be of great dimensional accuracy, rely on Federal Dimensional Control for their smooth-working dependability. The true test of customer satisfaction is product performance — and there's no better way to build this into your product than by controlling dimensions accurately. Profit by Federal's fund of practical gaging knowledge. Tell us about your dimensional problems and we'll gladly put our gaging knowledge at your disposal. Write FEDERAL PRODUCTS CORPORATION, 1138 Eddy Street, Providence 1, R. I.


FEDERAL
Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES.

DATES *to remember*

Sept. 6-7—Rail Steel Bar Assn., semi-annual meeting, Broadmoor Hotel, Colorado Springs. Association headquarters are at 38 S. Dearborn St., Chicago.

Sept. 10-14—Instrument Society of America, national instrument conference and exhibit, Sam Houston Coliseum, Houston. Society headquarters are at 921 Ridge Ave., Pittsburgh.

Sept. 10-14—International Foundry Congress, Brussels. All correspondence should be addressed to the general secretary, Foundry Congress, c/o Fabrimetal, 17 Drapiers St., Brussels, Belgium.

Sept. 11-13—Society of Automotive Engineers, tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., N. Y.

Sept. 21-23—National Assn. of Waste Material Dealers, Inc., annual fall meeting, Saranac Inn, Saranac Lake, N. Y. Association headquarters are at 271 Madison Ave., New York.

Sept. 24-26—National Truck Body Manufacturers & Distributors Assn., annual convention and supplier's exhibit, Haddon Hall, Atlantic City, N. J. Association headquarters are at 346 Connecticut Ave., N. W., Washington.

Sept. 25-26—Steel Founders Society of America, fall meeting, The Homestead, Hot Springs, Va. Society headquarters are at 920 Midland Bldg., Cleveland.

Sept. 26-28—American Society of Mechanical Engineers, fall meeting, Hotel Radisson, Minneapolis. Society headquarters are at 29 W. 39th St., New York.

Sept. 26-28—National Metal Trades Assn., annual convention, Palmer House, Chicago. Association headquarters are at 122 S. Michigan Ave., Chicago.

Sept. 26-29—Marking Device Assn., national convention, Edgewater Beach Hotel, Chicago. Association headquarters are at 134 N. LaSalle St., Chicago.

Oct. 1-4—Assn. of Iron & Steel Engineers, annual convention, Sherman Hotel, Chicago. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

Oct. 3-6—Pressed Metal Institute, annual meeting, Hotel Drake, Chicago. Institute headquarters are at 13210 Shaker Square, Cleveland.

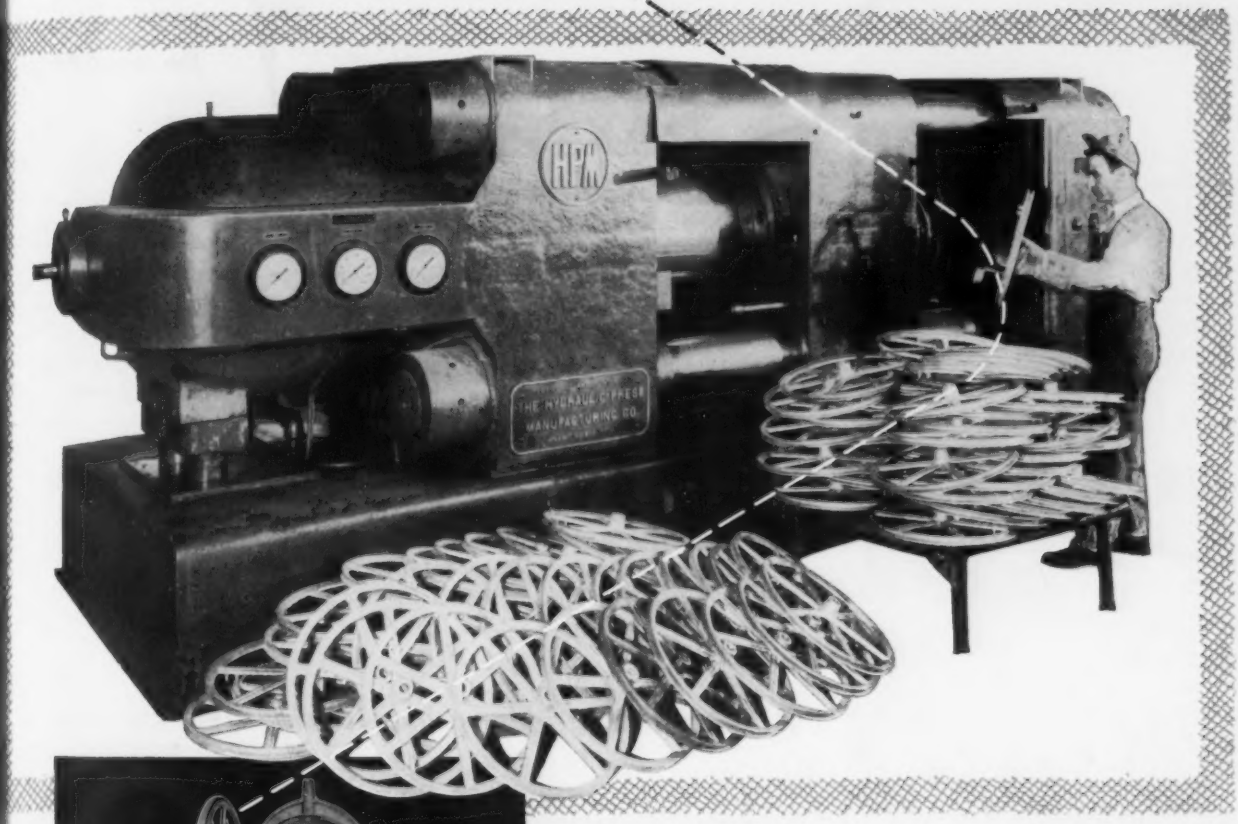
Oct. 8-13—Concrete Reinforcing Steel Institute, semiannual meeting, Grove Park Inn, Asheville, N. C. Institute headquarters are at 38 S. Dearborn St., Chicago.

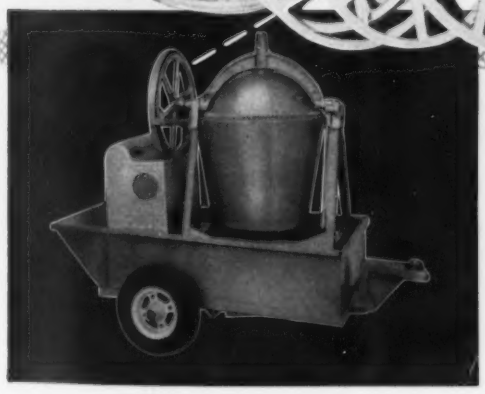
Oct. 10-12—Electrochemical Society, national convention, Hotel Statler, Detroit. Society headquarters are at 235 W. 102nd St., New York.

Oct. 10-12—Porcelain Enamel Institute, annual forum, Ohio State University, Columbus. Institute headquarters are at 1010 Vermont Ave., Washington.

Oct. 12-14—Metal Treating Institute, annual meeting, Hotel Detroit-Leland, Detroit. Institute headquarters are at 271 North Ave., New Rochelle, N. Y.

CUT PARTS COSTS WITH H-P-M DIE-CASTING MACHINES...





● Illustrated above is the die cast pulley wheel employed by Wright Engineering and Supply Company of Denver for a light weight portable mixer. Increased production and improved product quality has been Wright's experience since they installed this large H-P-M Die Casting Machine . . . and reaped the benefits that such H-P-M users as Hoover, General Electric, Westinghouse, Chrysler and many others enjoy.

If you haven't considered die cast parts, now is the time to investigate the process that has reduced costs and "upped" product quality for scores of manufacturers. As for the equipment, H-P-M Die Casting Machines have long been leaders in the field. There's a complete range of models (4 lbs. — 20 lbs. shots) for aluminum, zinc, brass and magnesium castings designed with proven H-P-M features for profitable operation. Call in your H-P-M engineer today for full particulars.

HPM

THE HYDRAULIC PRESS MFG. CO.

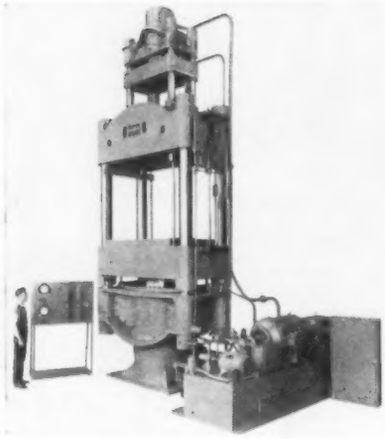
1006 MARION ROAD - MOUNT GILEAD, OHIO, U.S.A.

Makers of Presses for the Metal Working and Processing Industries - Plastics Molding Presses - Die Casting Machines Hydraulic Pumps, Valves and Power Units.

SERVING INDUSTRY THROUGH HYDRAULICS

NEW *equipment*

new and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on the opposite page.

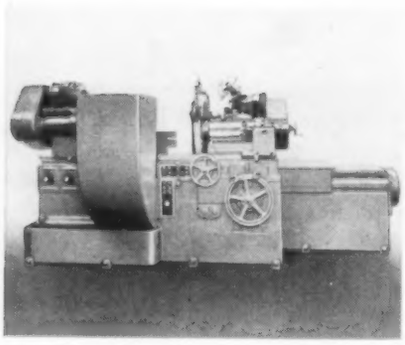


Press designed for vital defense production

This specially built combination compression and transfer molding press is being used in top priority defense work. Designed for hazardous location, the unit is equipped with special safety switches and has two pushbutton control panels —one located near the press, and another in a separate room providing complete remote control. Operation can be changed from straight compression to transfer molding simply by flicking a switch.

In the compression cycle, the circuit is arranged to provide two breathe cycles, opening of the breathe being controlled to ⅛ in. Curing cycle is set by a motor-type timer and can be furnished with any required range. Pump is equipped with compensating control. The mechanical knockout is hydraulically operated, and is fully automatic. *American Steel Foundries, Elmes Engineering Div.*

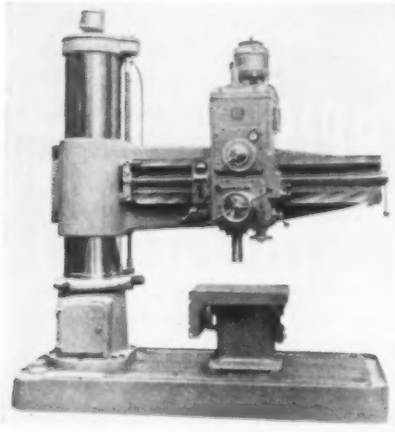
For more data insert No. 1 on postcard



Aircraft strut grinder grinds landing gear components

Built especially for grinding the components of landing gear mechanisms, a new Norton grinding machine provides capacities required for these units, which because of irregular shape and large swing are not accommodated in standard sizes of cylindrical grinders. It is arranged for a 26 or 32-in. diam swing over the table, and is available in work length capacities of 72 and 96 in. By means of a gap which is adjustable, the grinder offers a swing capacity of 80 or 8[illegible] in. The machine is the traveling wheel head type. A swivel table permits grinding of tapers. *Norton Co.*

For more data insert No. 2 on postcard



Kolb radial drills are high production machines

These radial drills have hardened and ground gears sliding on hardened and ground spline shafts rotating on ball bearings. Time saving features include electro-hydraulic clamping system for rigid locking (automatically or by hand) of column and spindle head, pushbutton controls and speed selector—all centrally located on the head. The machines can be equipped with a device for preselection of feeds for a sequence of rough and finish drilling, reaming and tapping operations. Machines have various capacities for drilling cast iron from 1⅜ to 8 in. diam, maximum drilling radii from 27 to 1[illegible] in. Column diameters are from 7½ to 35 in. All these radials have ample range of speeds and feeds for light, medium or heavy duty drilling operations. *Cosa Corp.*

For more data insert No. 3 on postcard

Turn to Page 38

FREE *publications*

These publications describe money-saving equipment and services... they are free with no obligation... just fill in and mail the postcard.

Gear cutting machines

The robust design of these gear cutting machines assures continued high production as well as high accuracy. These machines, described in a new 26-p. catalog, have been designed to meet a host of general and special gear cutting problems. Backing the line of gear cutting machines is the MAAG line of gear measuring and testing instruments. Shown in the catalog are numerous examples of gear applications. *MAAG Gear-Wheel Co., Ltd.*

For free copy insert No. 29 on postcard

Pumps

Pointers in choosing a suitable pump and pumping equipment are provided in a recent 30-p. booklet. Factors affecting a pumping installation, such as the height through which the liquid must be raised, velocity and friction losses are explained. Typical problems are worked out and pump installations capable of meeting varied requirements are described. *Ruston & Hornsby, Ltd.*

For free copy insert No. 30 on postcard

Steel tubing

Condensed data on microstructure, critical points, effect of alloy elements, forging, machining, welding and thermal treatment on 14 well-known alloy steels used in tubular parts is given in a new booklet. Suggestions on use of alternate grades of medium carbon, or full hardening, tubing steels is included. *Babcock & Wilcox Tube Co.*

For free copy insert No. 31 on postcard

Grinders and arbors

An 8-p. illustrated catalog contains information on ball-bearing bench grinders, arbors, sanding discs and face plates. Specifications, dimensional diagrams and application suggestions are included for using the equipment to build a wide variety of special production tools. *Poly Products.*

For free copy insert No. 32 on postcard

Cold finishing

Equipment for the straightening of pipe, tubes and shapes, roll grinders, billet peelers, bar pointers, polishers and sizing devices are described and illustrated in new folder. Latest developments in Medart line are included. Catalogs are also offered. *Medart Co.*

For free copy insert No. 33 on postcard

Turn to Page 158

use postcard below

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New York, N. Y.

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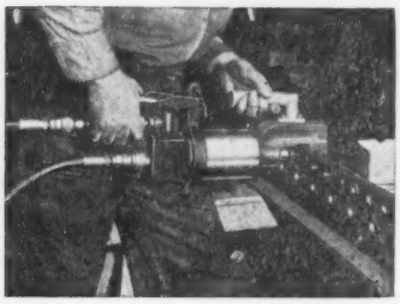
new equipment

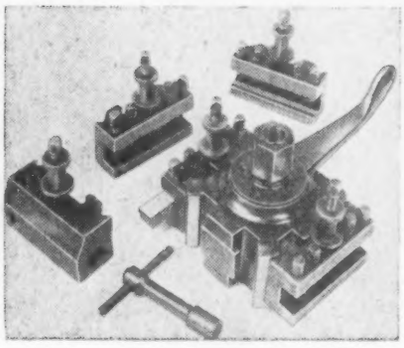
Continued



Portable riveter utilizes hydraulic pressure

Riveting by the new Manco Riveteer utilizes a squeezing action rather than the customary hammering of the rivet head. The unit delivers 60,000 lbs thrust through the hydraulic ram and will drive ⅝-in. cold rivets. The Riveteer is portable, easy to operate and the entire riveting cycle takes but 2½ sec. The operator merely presses the hand valve to actuate the ram. Release of the valve provides automatic retraction. Full thrust is delivered over the entire stroke and no adjustment is needed between different length rivets. *Manco Mfg. Co.*

For more data insert No. 4 on postcard



Universal tool holder permits quick tool setups

The Dimco tool holder for quick and accurate clamping on any engine lathe gives the operator unusual amount of flexibility and ease along with complete accuracy in interchanging multiple tool setups. A main center section is fixed in position on the compound and may be rotated through 360° for a setup for any series of operations. There are three possible positions for any of the tool setups. Standard practice is to furnish a five-tool setup with a Morse taper hole for drill chuck or boring bar, a V-type setup for holding a round bar, and three setups for square or rectangular shape tools. *Kelvin Systems Corp.*

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Shrink-fit by sub-zero cold

Extraordinary savings in time and money on shrink-fit assembly are being reported by users of the new Model R-120 chilling machine. Utilizing the predictable shrinkage of metals chilled to 120° below zero F, the Sub-Zero process is said to boost production, eliminates rejects formerly associated with many press-fit assembly operations. Removing 2000 Btu per hr at temperatures as low as 120° below zero, the machine shortens, considerably, the shrinkage time needed for press-fit assembly. It permits much tighter fit without distortion of parts, out-of-roundness and misalignment. *Sub-Zero Products Mfg. Div., Deepfreeze Distributing Corp.*

For more data insert No. 6 on postcard

Waterproof service cover

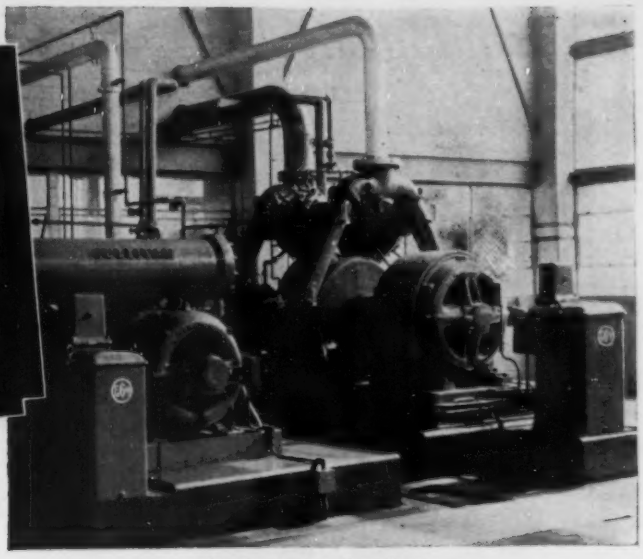
Protection of machines against the harmful action of grease, water and dust is possible with new tough, durable plastic waterproof service covers. These maroon covers have machine stitched bound edges to insure sturdiness and long life. *South Bend Lathe Works.*

For more data insert No. 7 on postcard

Turn to Page 40

EC&M OIL-IMMERSED Motor Starters

A BIG AID TO PRODUCTION
OIL-IMMERSED FOR LOW MAINTENANCE



Air Compressor Installation

Compensator mechanism

Complete compensator

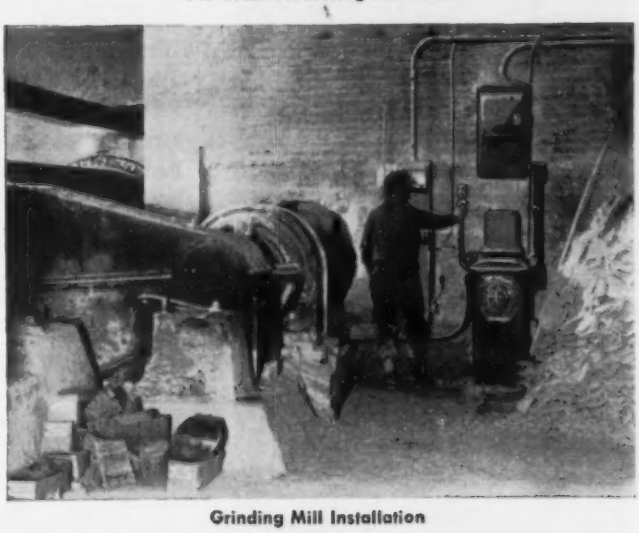
For Grain Processing Machines

Many industrial plants rely on EC&M auto-transformer 220-550 volt Motor Starters for continuity of production. Oil-immersed, these starters are always well lubricated and protected from corrosion — *the need for frequent inspection or maintenance is eliminated.* Motor circuits are made and broken under oil—thoroughly safe, no dust hazards.

The compensator mechanism uses a simple, double-throw contactor requiring only one magnet coil—transition from reduced voltage starting to full voltage running is *automatic.* Squirrel-cage or synchronous motors are brought up to speed quickly, safely—with greater skill than human hands could do it.

Overload relays give inverse-time-element protection and also *trip instantly* on heavy over-currents. A magnetic balance in each relay absorbs heavy starting currents and allows a *low* current setting for accurate protection under running conditions.

Write for Bulletin 1045 and No. 19 ACCELERATOR Bulletin



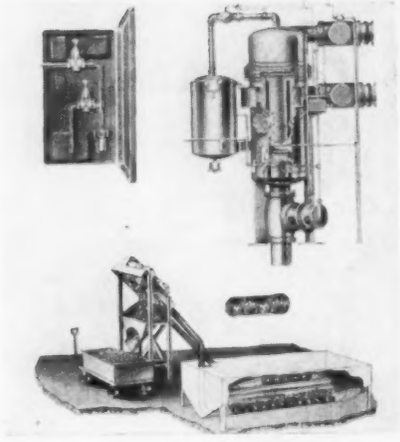
Grinding Mill Installation

THE ELECTRIC-CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Jolt-squeeze-strip molding machine has centralized control

The world's largest jolt-squeeze-strip molding machine for the production of massive copes and drags of uniform standard features push-button control of all operations. Operating on 80 psi, the machine has a squeeze capacity of 80,000 lb and jolt capacity of 4000 lb. Squeeze cylinder diameter is 36 in., pattern draw 14 in. and squeeze piston stroke 14 in. Flask spade ranges from 38 to 54 in., left to right, and from 32 to 50 in., front to back. The squeeze head is power-operated, the jolt cycle timer-controlled, and the squeeze cycle regulated by a pressure switch. Two-speed vibrating and stripping operations are automatically controlled to eliminate dependence upon the operator's judgment. The machine is designed for recessing 50 in. below the floor level and extends 116 in. above. Machine is furnished complete. *Spo, Inc.*

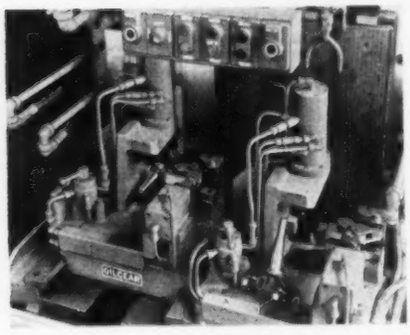
For more data insert No. 8 on postcard, p. 37



Automatic clarifier extends coolant and tool life

A new automatic clarifier system removes abrasives and other solid contaminants from machine tool coolants, transports waste to a disposal point, and cleans its own filtering screens in automatically timed cycles. Equipment removes particles as small as 5 to 10 microns, consists of a multiple-screen clarifier, blowdown tank with conveyer, and an automatic control panel. Contamination, removed from clarifier screens by blowdown action, settles in V-bottomed blowdown tank and is automatically removed to disposal point by built-in, tube-enclosed Houdaille chain conveyer. The system is specifically designed for plant operations involving large numbers of cutting and grinding tools served by central coolant system, and may be used for clarification of mineral oil or soluble oil coolants. *Honan-Crane Corp.*

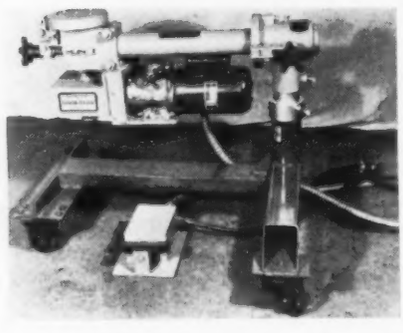
For more data insert No. 9 on postcard, p. 37



Broaching edges of steering knuckle spindle bosses

Duplicate sets of hydraulically operated fixtures and associate tools installed on an Oilgear 10x42-in. stroke double slide vertical surface broaching machine are used to broach the sides of four forged steel steering knuckle spindle bosses A and B at the rate of 410 parts per hr at 85 pct efficiency. Approximately 0.040 in. stock is removed from each boss. One fixture is loaded while spindle in other fixture is being broached. With automatic cycle, operator merely trips rotary valve lever to release hydraulic locating and clamping pin and slide clamp. *Oilgear Co.*

For more data insert No. 10 on postcard, p. 37



Redesigned power attachment for Aronson positioners

Motorized rotation of the work table at a nominal cost is provided by the redesigned universal power attachment for the positioner, with speeds infinitely variable from zero to 6 rpm. Quick engage and disengage of the power transmission for use of power rotation or manual rotation and positioning are a feature. Worm and worm gear final drive is adjustable to virtually eliminate back-lash on the work table. A friction clutch coupling allows the operator to position a workpiece on the rotational axis whether the table is turning or not. Installation takes 5 to 10 min. *Aronson Machine Co.*

For more data insert No. 11 on postcard, p. 37

Turn to Page 146

STEEL

THE VEHICLE OF DEFENSE

Without steel there would be little or no movement of men and material . . . there would be little or no defense.

For steel is the stuff of which tanks are made . . . in the hands of trained and spirited men, steel becomes a powerful engine of destruction to the enemies of free America.

Thousands upon thousands of tanks and a proportionate number of tank retrievers are now needed and are on order. The country's rolling mills and forges have the go-ahead to produce the many special steels required for these specialized vehicles.

Weirton Steel Company, pledged to participate in defense measures in any way and to any required degree, is supplying steel on approved allocation to hasten the completion of America's mechanized defense program.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION

UNIVERSITY OF MICHIGAN LIBRARIES

IRON AGE *introduces*

Robert N. Merk, appointed chief engineer of SHARON STEEL CORP., Sharon, Pa.

W. B. "Woody" Moore, appointed factory manager plant two, in North Hollywood, Calif., by BENDIX AVIATION CORP.

William W. Wellborn, appointed research engineer of the Carbide Research & Development Dept., FIRTH STERLING STEEL & CARBIDE CORP., Pittsburgh.

John T. McCarley, promoted to assistant general manager of the Philadelphia Div., YALE & TOWNE MFG. CO. **Kenneth H. Bergstrom** was appointed manager of production of the afore-mentioned division.

N. W. Bass, promoted to vice-president by the BRUSH BERYLLIUM CO., Cleveland.

Don S. Urquhart, appointed product engineer by the WEL-MET CO., Kent, Ohio.

Harlie M. Freeman, appointed foundry superintendent of the TAYLOR-WHARTON IRON & STEEL CO., High Bridge, N. J. **E. Montgomery** was appointed chief metallurgist.

Fred L. Rupp, appointed product sales manager, Strongbarn roofing and siding, GRANITE CITY STEEL CO., Granite City, Ill. **John P. Stoll, Jr.**, named manager of the Dallas office and **John A. Leschen** has been appointed assistant to the vice-president in charge of sales.

Bradley Bartlett, appointed chief engineer, KLING BROS. ENGINEERING WORKS, Chicago.

C. Fred Watkins, appointed sales manager of HELLER BROS. CO., with headquarters at Newcomerstown, Ohio.

V. de P. Gerbereux appointed manager, centrifugal pump sales division of WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J.

George Breza, appointed chief engineer of MACKINTOSH-HEMPHILL CO., Pittsburgh.

George H. Goecke, named sales engineer for INDUSTRIAL OVENS, INC., Cleveland.

D. G. Holt, appointed assistant superintendent, mechanical maintenance department of the Midland Works, CRUCIBLE STEEL CO. OF AMERICA. **H. C. Ende, Jr.**, has been appointed Milwaukee district sales manager.

R. A. Lees, joined AUTOMOTIVE RUBBER CO., INC., Detroit, as their new general plant manager with complete responsibility for operation of the company's new rubber mill and all processing departments.

Richard P. Carroll, named production control manager for HUNT-SPILLER MFG. CORP., Boston.

Galen B. Price, named manager of the purchasing research department, FORD MOTOR CO., Dearborn, Mich. **B. W. Rose**, named plant manager of the new Ford division Kansas City Aircraft Plant. **Ben D. Mills** becomes assistant manager and **Alfred D. Weir** will be production manager.

Charles S. Brown, appointed general purchasing agent for the LINCOLN-MERCURY division of Ford Motor Co., Detroit.

Turn to page 86

JAMES MAC GREGOR, elected president of York Engineering & Construction Co., Pittsburgh.

L. L. GARBER, appointed general manager, Hinderliter Tool Co. Div., H. K. Porter Co., Inc., Tulsa, Okla.

A. BOYD CORRELL, elected vice-president in charge of sales of Bardwell & McAllister, Inc., Burbank, Calif.

IRON AGE introduces

George Russell, elected

IRON AGE

salutes

Fred J. Robbins

AS one of the early commercial users of boron steel, Fred Robbins had to overcome a lot of skepticism to get his ideas across. Like a few other outstanding metallurgists, he saw its commercial possibilities many years ago.

In March of this year most manufacturers were just getting into boron steels. But by then the Plomb Tool Co., where he heads up metallurgy, had used some 40,000 tons of these steels in its hand tools. Plomb used them to get properties which others achieved through the use of more expensive alloy additions.

"As a matter of fact," Fred says, "We Americans have kept on adding alloys to cover up a lot of sloppy heat treatment instead of licking the heat treating job first." Heat treating is his hobby.

His theory is that steel must be tailored to field service requirements—"What are we going to do with it and how is it going to be used when we get it made?"

Fred started his business life as a metallurgist for Lindberg Steel Treating Co. in Chicago; then became a metallurgical engineer for Bliss & Laughlin. During the war he joined Plomb Tool Co. at Los Angeles as vice-president and metallurgical engineer, a position he still holds. In 1946, he organized Sierra Drawn Steel Co., the only independent cold-finished bar mill west of Chicago.

Today, in addition to these connections he makes time for a lot of work for the American Society for Metals; talking metallurgy up and down the West Coast, and injecting life (and some controversy) into lagging panel discussions on metallurgy.

UNIVERSITY OF MICHIGAN LIBRARIES

GEORGE R. BROCKWAY, appointed vice-president in charge of sales and advertising of Rapids-Standards Co., Inc., Grand Rapids Mich.

THOMAS W. CURTIN, appointed director of purchases, Pihladelphia Div., Yale & Towne Mfg. Co.

W. E. MADDEN, appointed director of sales of Pettibone Mulliken Corp., Chicago.

WILLIAM R. HEATH, named manufacturing director of Buffalo Forge Co., Buffalo.

IRON AGE *introduces*

Continued

J. L. Singleton and **R. S. Stevenson,** elected to the board of directors of ALLIS-CHALMERS MFG. CO., Milwaukee. **W. E. Hawkinsin** was named a vice-president.

R. L. Leventry, Jr., appointed assistant division superintendent; **C. B. Smiley,** assistant superintendent — utilities; and **L. K. Smith,** assistant superintendent — transportation and general services, Maintenance and Utilities Div. of U. S. STEEL's Fairless Works, Morrisville, Pa. **C. F. Menges** and **W. E. Eckelman** appointed general supervisors—equipment installation.

Sheldon T. Dahl, named West Coast manager of the Industrial Chemicals Div. and Plastics and Resins Div., of AMERICAN CYANAMID CO., Los Angeles.

J. Joseph Kelleher, appointed assistant director of sales, explosives department, HERCULES POWDER CO., Wilmington, Del.

Harold J. Poole, appointed service manager, Pacific division, succeeding **R. M. LeRoy,** who is retiring after 39 years with the B. F. GOODRICH CO., Akron, Ohio. **Richard F. Ernewein** was promoted as manager of farm service tire sales. **Eldrid A. Kunze** was named manager of the retail service supervision department, Replacement Tire Sales. **Edgar T. Gregory** was named manager of flat belting sales, succeeding **A. Clarke Mack,** resigned, and has been succeeded as operating manager of the Industrial Products Sales, by **Donald E. Schlemmer.**

John E. Gill, appointed chief engineer of BUFFALO FORGE CO., Buffalo. **George P. Schivley** was promoted to plant manager.

J. M. Hume, appointed assistant director of sales of PETTIBONE MULLIKEN CORP., with headquarters in Chicago.

H. A. Harrington, appointed general manager of American-Fort Pitt Spring Div., H. K. PORTER CO., INC., Pittsburgh.

Troy H. Bickerstaff, appointed general supervisor of air brakes, with headquarters at Topeka, Kan., succeeding **Frank T. McClure,** who is retiring after 52 years of service with the SANTA FE RAILWAY.

George Russell, elected treasurer of GENERAL MOTORS CORP., succeeding **Myer L. Prentis** who will retire in September. **Harold O. Flynn** named chief aviation engineer, Chevrolet Aviation Engine Div., with headquarters at Tonawanda, N. Y. Mr. Flynn succeeds **C. W. Frederick** who has returned to Detroit as staff engineer.

Frank Farnan, named advertising manager of A. M. BYERS CO., Pittsburgh.

R. J. Sigafoo, named chief engineer of the TWIN COACH CO., Kent, Ohio.

S. D. Flinn, elected director and secretary of U. S. STEEL SUPPLY CO., Chicago.

Herbert G. Pratt, promoted to manager of the San Francisco office, Industrial Chemicals Div. of the AMERICAN CYANAMID CO.

David C. Hall, elected president and general manager of DIAMOND MFG. CO., Wyoming, Pa.

Clifford M. Dunn, appointed manager of GENERAL ELECTRIC CO.'s Michigan Apparatus district. Mr. Dunn succeeds **Arthur R. Hines,** who has been appointed assistant manager of marketing for the company.

William J. Crawford, elected president of the newly formed BRITISH-AMERICAN CARBON CORP., New York.

J. W. Zinss, appointed as general manager of operations of the DURALOY CO., Scottdale, Pa. **Harry Robbins** has been named as assistant to Mr. Zinss.

Ralph Rathyen, promoted to the post of assistant manager, Crucible and Refractories Div., of JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

George E. Hopf, appointed manager of the newly created Marketing Div. of HENRY DISSTON & SONS, INC., Philadelphia.

Robert E. Kroc, named assistant sales manager of the FAHRALLOY CO., Warsaw, Ind.

OBITUARIES

Carl E. Pearson, widely known Mid-West electrical research engineer and recently operating his own private laboratory at his home in Cleveland.

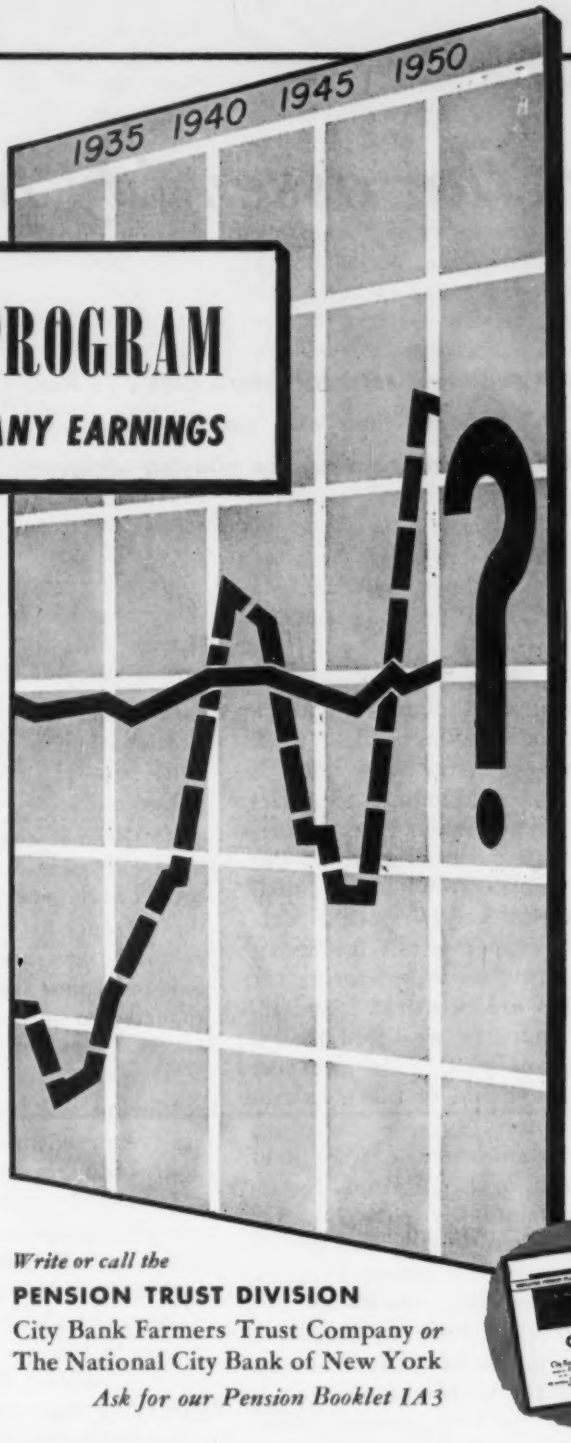
Sidney Tuschman, 46, president of the St. Louis Steel Baling Co., in E. St. Louis, Ill.

George Hamilton Burnett, president of Hartel Bros. Co., Boston.

Patterns in Pensions

YOUR RETIREMENT PROGRAM

SHOULD BE GEARED TO YOUR COMPANY EARNINGS



IF your company
EARNINGS ARE STEADY

Your company probably can afford the permanent commitment of an adequate pension system.

IF your company
EARNINGS ARE ERRATIC

Your company probably can best solve the retirement problem through a deferred profit-sharing trust—or a combination of a modest fixed pension commitment plus a profit-sharing retirement plan.

FIND OUT what plan
BEST fits your business

Let us help you with complete analyses, including cost estimates. There is no obligation, of course.

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on the assembly line

automotive news and opinions

Aluminum radiators seen for future cars . . . Auto plants will produce their own machine tools . . . Ceramics may relieve pinch on alloying elements

by Walter G. Patton

Aluminum Radiators — At a meeting in Washington last week the auto industry was told it should look to aluminum as a permanent replacement for copper, particularly for car radiators. Defense Mobilizer Wilson pointed out that the long-term U. S. outlook for copper is not promising whereas raw material sources for aluminum are plentiful. Similarly, the industry was told that a shortage of zinc is in prospect and steps should be taken to find a substitute.

Car radiators made of aluminum have been used in Europe. Harrison Radiator Div. of GM has such a research project in an advanced stage, it is reported. Automobile processing engineers admit there are some forming and welding problems with aluminum that remain to be solved—in addition to the ever present factor of holding costs close to existing levels.

It is significant that two sharp reminders of American progress toward becoming a "have not" nation should occur in a single week.

Hold Percentages — Another topic for discussion at the Washington meeting was automatic transmissions. The government would like to hold production of automatic drives at the present percentage of total output. At the same time, it is taking the position that no producer without a fully automatic drive should be frozen out.

At the moment, Chrysler is the only car manufacturer who continues to offer a clutch pedal with its advanced transmission. The company has been attempting to tool for a new transmission but is reported to be doing so under the severest kind of difficulties.

Placing the Blame — It is generally agreed that ill-advised and confused government policies have contributed substantially to the present machine tool squeeze. True, there has been a noticeable lack of enthusiasm by some machine tool builders to expand their plants in the face of (1) a shortage of skilled workers, (2) the threat of re-negotiation, (3) possible over-production of machines, (4) shortages of raw materials. It is argued, however, that if Washington policies had been focused on removing road barriers instead of controlling prices and profits the machine tool program might be much further ahead today.

Despite trying delays and many obstacles, the machine tool building program must be moved ahead. The outlook is for (1) greater direct participation by the auto industry, (2) intensified training programs to develop quickly the necessary skills of machine tool workers, (3) super priorities for raw materials.

Engine Tooling Progress—Many Detroiters are watching closely the efforts being made by the auto industry to complete tooling programs for new high compression overhead valve engines. DeSoto, Ford 6 and Lincoln are given a good chance to get in production early in 1952. DeSoto may start pilot production before this date.

The Ford 6 program is well advanced from a machine tool standpoint although the new Ford foundry at Cleveland is lagging. Incidentally, a great many innovations in foundry processing and equipment are expected to be introduced at the new Cleveland plant.

Build Its Own—Dodge, it is reported, has recently run into a snag and may be forced to build some of its major machine tools in its own plant. Engineering will be furnished by the machine tool builders, it is understood, but at least one large major machine will be built by Dodge, according to present information.

This is a trend that may be expanded in the automobile industry if the tooling bottleneck gets tighter as is now anticipated.

Turn Page

assembly line

Continued

Ceramics in Jets—Keep your eye on ceramics. There are indications that ceramics may offer the best solution for blades in gas turbines. If experiments continue to be successful, ceramics will replace many thousands of pounds of precious alloy in jet engines. Another result of progress in ceramics may be relief from existing pressures to change over to boron-treated steels instead of alloy. With the exception of the Air Corps, practically all automotive and Ordnance vehicles are expected to start changing to boron steels commencing in September.

Powder Metallurgy — Progress in the art of powder metallurgy has been phenomenal. It is now reported that at least one firm is producing turbine blades with tensile strength in excess of 100,000 psi without impregnation of copper. In addition to strengths undreamed of a few years ago, fast production (to exacting size specifications) and low labor costs have helped to expand the application of powder metallurgy. The strong trend toward powdered metals may be given a big push as a result of successful application on a broad scale in the defense program.

Dynaflow History—Last week Buick delivered the one millionth Dynaflow to a Chicago motorist. An appropriate celebration was held, recognizing public acceptance of the first torque converter type transmission for a passenger car.

According to Buick officials, no other major automotive invention, including the self-starter, has had a more eager public reception. During its first year more than two-thirds of all Buick Roadmasters were Dynaflow - equipped. These transmissions are now standard on the Roadmaster series and optional on the Super and Special. More than 77 pct of all Buicks sold last year were equipped with Dynaflow. Company officials believe 95 pct of its models would have automatic transmissions if unlimited production were possible.

Came a Long Way—Buick engineers estimate Dynaflow transmissions have traveled more than 12 billion miles on the nation's highways. Half a million Dynaflows were built during the past 15 months. Record monthly output is 42,818 units.

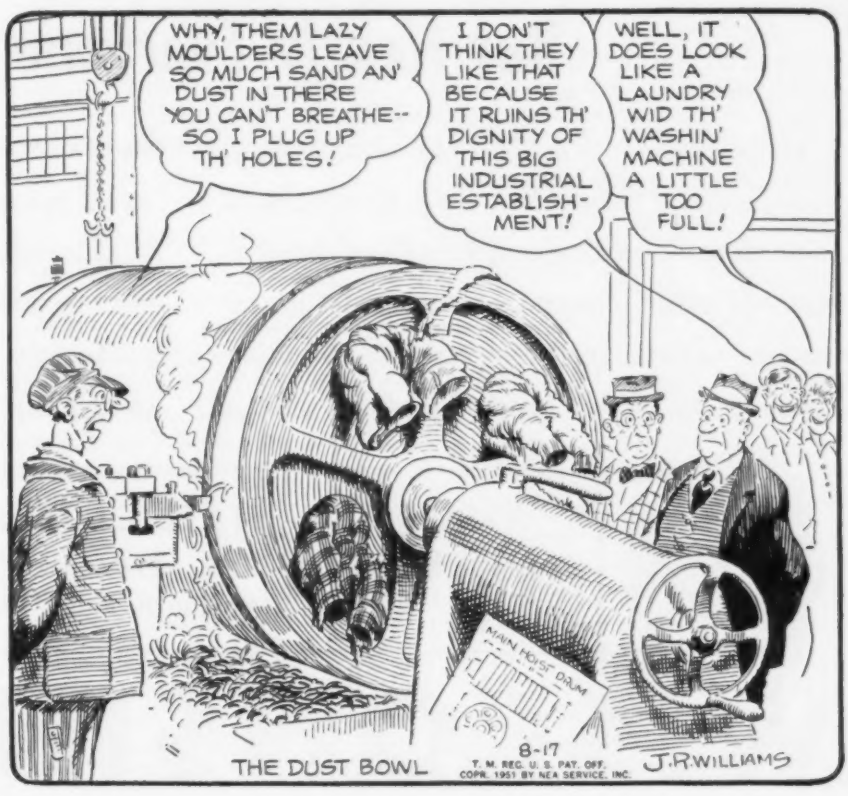
At the Chicago meeting, press representatives were reminded that all automatic transmissions introduced recently have been the torque converter type. Convincing engineering arguments were offered in favor of the Buick system of driving at all times through a fluid connection to the engine.

How to Save Gas—During open discussion the question of economy of operation was introduced. Among the significant points brought out were: (1) fuel cost is less than 20 pct of the operating expense of a car, (2) tests show that the same drivers operating the same car over the same road may vary as much as 7 miles per gal due to variation in driving habits, (3) an automatic transmission is not as efficient as the synchro-mesh design. However, by watching his driving habits a car owner can make the automatic device perform as efficiently as a hard gear transmission.

Two Buick owners present at the conference reported 17 miles per gal. These records are based on extensive driving experience and not on short trips.

Dow Sales — Record-breaking sales of $339,588,268 are reported by Dow Chemical Co. for the fiscal year ended May 31. The sales figure is 54 pct above the previous year. Net earnings also hit an all-time high of $41,334,744. Dow has averaged $59 million in expansions for the past 5 years. The company's taxes for the year ended May 31 total $68,200,000.

THE BULL OF THE WOODS By J. R. Williams


WHY, THEM LAZY MOULDERS LEAVE SO MUCH SAND AN' DUST IN THERE YOU CAN'T BREATHE-- SO I PLUG UP TH' HOLES!
I DON'T THINK THEY LIKE THAT BECAUSE IT RUINS TH' DIGNITY OF THIS BIG INDUSTRIAL ESTABLISH-MENT!
WELL, IT DOES LOOK LIKE A LAUNDRY WID TH' WASHIN' MACHINE A LITTLE TOO FULL!
MAIN HOIST DRUM
8-17
THE DUST BOWL
T. M. REG. U. S. PAT. OFF. COPR. 1951 BY NEA SERVICE, INC.
J.R.WILLIAMS

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He's Not Ordering Steel—
But Nearly Everyone Else is

Let's be honest about it. We can't always fill all our customers' steel requirements. Our plant is producing every ton of steel in its capacity and we are doing everything we can to increase our facilities. Yet it's not enough. You know the situation as well as we do.

But we can and will continue to produce steel as fine as strict metallurgical control can make it. And we can and will continue to be completely honest about our ability to deliver. When we promise delivery, you can be sure your order will be shipped as promised, in the specifications and with the quality you have always expected from us.

INTERNATIONAL HARVESTER

WISCONSIN STEEL COMPANY, affiliate of INTERNATIONAL HARVESTER COMPANY
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WISCONSIN STEEL

west coast progress report

digest of far west industrial activity

by R.T.Reinhardt

Spotty Sales—A review of business in California by the U. S. Dept. of Commerce Field Service reports second quarter retail trade was spotty with sales of several important lines well below 1950 levels. Outlook for the remainder of the year may be indicated by the attendance and buying of retailers during the July market week at the San Francisco Merchandise Mart.

There were 30 pct fewer buyers, and manufacturers' comments ranged from: "orders placed were within 10 pct of last year's market" to "when does the market start?" It definitely was not a sellers' market.

Western manufacturers are feeling this softness and many find themselves cutting back production and hoping defense work will see them through. Paradoxically, they still clamor for steel, aluminum and copper. NPA inventory checks will probably uncover some illuminating facts.

Schedule Off — Completion of the Howe-Sound Co. cobalt smelter at Garfield, Nev., is being delayed because equipment suppliers are behind schedule. Production was scheduled to start in October, but it is believed January 1952 is a more realistic date.

American Smelting and Refining Co. intends to start construction of a $1 million zinc and lead ore concentrator in northeastern Washington this month. Isbell Construction Co. of Reno, Nev., is building a 4-mile access road from near Northport, Wash., to the site. Plant is expected to operate late in 1952.

Steel Feeler—A new steel industry for Canada may be a by-product of Aluminum Co. of Canada, Ltd.'s $500 million development at Kitimat about 400 miles north of Vancouver, B. C.

McNeely Dubose, Alcan vice-president, has stated that in addition to wood pulp and newsprint plants already scheduled to utilize some of the low-cost power Alcan's project will develop, unidentified steel company officials have shown interest in the possibilities of establishing a furnace operation. Iron ore and coal are reported close by.

Urges Conservation—Raw materials for the production of iron and steel in the Intermountain area are "reasonably assured for many years to come provided careful and sensible measures of conservation are practiced," according to Walther Mathesius, president of Geneva Steel Co.

Addressing the annual Utah Economic Development Conference, Mr. Mathesius stated that the U. S. Bureau of Mines estimates proved reserves of iron ore in the Intermountain area to be 100 million gross tons of 45 pct iron content. An additional 250 million gross tons are indicated by the Bureau. The steel executive urged conservation.

Stoves to Generators—O'Keefe & Merritt, Los Angeles stove manufacturer, has been awarded the largest prime contract other than aircraft to go to southern California.

A $10 million contract has been signed to produce an undisclosed number of motor-driven electric generator sets for the armed forces. No major expansion is planned by the company as production of stoves will be cut approximately 50 pct.

Reaching Out—General Metals Corp., Oakland, Calif., will move the tools and equipment of the Pittsburgh Valve & Fittings Corp. of Barbeton, Ohio, to its California plants to expand its line.

General Metals recently purchased the Pittsburgh company for about one-half million dollars.

Not All Defense—Production of military aircraft hasn't completely eliminated strictly commercial ventures. Lockheed Aircraft has received an order from Air France for a fleet of Super Constellations which brings the company's backlog on commercial ships to about $100 million. Military backlog is estimated to be close to the $900 million mark.

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CONTINUOUS GRINDING WITH TWO-MACHINE TEAM DOUBLES PRODUCTION

Two CINCINNATI FILMATIC No. 3 Centerless Grinders, in the plant of a prominent aviation equipment manufacturer, equipped to continuously grind piston rods.

• One of the most economical ways to achieve large volume production is by the continuous machining method. How this was accomplished for precision grinding operations is illustrated here . . . two CINCINNATI FILMATIC No. 3 Centerless Grinders are hitched together to pull the production load of grinding piston rods. A CINCINNATI Feedmatic Hopper starts them through the first machine and a conveyor takes them to the second machine for the finish grind. And to maintain the highest quality finish, filters remove sludge from the coolant. Now one man controls this production team, and output per man hour is more than double the former method. ¶Continuous production becomes a reality with CINCINNATI FILMATIC Centerless Grinders handling the job. Their FILMATIC grinding wheel spindle bearings will never quit regardless of the load . . . lubrication is principally automatic . . . hydraulic grinding wheel truing . . . variety of standard attachments, including Feedmatic Hoppers for thrufeed and infeed operations. Other features and advantages are outlined in catalog No. G-570-1, and brief specifications may be found in Sweet's Catalog File.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

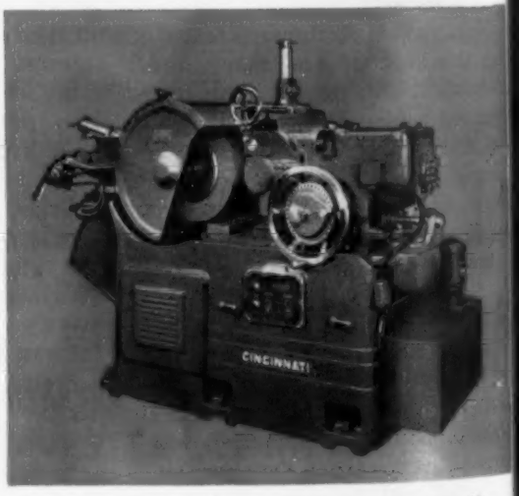
CINCINNATI Type "E" Feedmatic Hopper

FILMATIC

PRODUCTION DATA

Part name	Hydraulic piston rod (14" long)
Material	Alloy steel
Stock removal	First machine .061" on diameter; Second machine .005" on diameter
Surface finish	20 micro
Production	143 per hour

CINCINNATI



CINCINNATI FILMATIC No. 3 Centerless Grinding Machine. Complete specifications may be obtained by writing for catalog No. G-570-1.

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

the federal view

this week in washington

by George H. Baker

Rollback Plan Flounders—Government plans for ordering price rollbacks on machinery and many manufactured products are rapidly fading.

What was probably the last big attempt by OPS to roll back factory prices floundered last week when about $2,500,000,000 worth of rollbacks were indefinitely postponed to give the agency time for "further study."

Previously, Aug. 13 had been set as the deadline for price orders requiring rollbacks to pre-Korea levels plus cost increases through Mar. 15.

Present situation now permits manufacturers to go ahead with the increases provided by the regulations. They do not have to comply with the rollback provisions.

Higher Power Rates?—Senate tax-writers are warned that electric power companies will have to ask for higher rates if Congress passes the House-approved tax bill.

Charles B. Oakes, president, Pennsylvania Power & Light Co., recently told the Senate Finance Committee that postponement of higher rates would slow down utility expansion.

Tax bill approved by the House eliminates the present 3 1/3 pct federal levy on residential and commercial power bills. Oakes says this is a wise move, but objects to the higher federal income taxes that power companies would be forced to pay. Such an increase simply would have to be passed on to the consumers, he says.

Buying Lull Fades — Current tendency of consumers to postpone buying many kinds of retail products will disappear "within a month or two," according to government trade observers.

Retail inventories have risen in value to 1.6 times monthly sales, the Commerce Dept. found in a recent study. But effective sales promotion and some price reductions are expected to reduce these swollen inventories, particularly in the hardware, home furnishings, and building materials lines.

Secretary of the Treasury John Snyder says it's all a temporary situation. He predicts that a new round of inflation will open buyers' pocketbooks before the end of the year. Increases in personal income and in employment generally will knock down inventories and foster another buying spree, the Secretary of the Treasury says.

Less Tin, More Plastic—Lighter tin cans for some purposes, an increase in the use of flexible plastic containers, and reduced use of cellophane may be in the offing.

Tin-can industry is studying the matter of thinner cans for specific packaging needs as one means of stretching their tinplate allotments to provide more production. NPA also is studying ways of increasing the present allocation of 1,000,000 tons of steel per quarter since canmakers are now being forced to dip into their inventories to meet demands. In any event, NPA says, steel allocation to the can industry will not be reduced below the million-tons-a-quarter figure.

Bomber Carriers Planned—Navy officers aren't trying to conceal their pleasure over Rep. Carl Vinson's introduction of a bill (HR 5078) calling for construction of two more giant carriers, but there's an indication in a departmental statement that the Georgia Democrat may have anticipated Navy planning by about 1 year.

European Output Up—Military production in western Europe is slated to double during the coming year.

Stepped-up rate of rearmament will be possible because of imported U. S. equipment, particularly machine tools and raw materials.

At the same time, the present high level of demand is providing new incentive to industrial producers in non-Communist nations. And Marshall-Plan officials report a "growing determination" to resist Kremlin aggression.

Total industrial production in western Europe during first quarter 1951 was 39 pct above prewar rate.

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Don't Scrap PROFITS- from Scrap!

Today your DORMANT SCRAP* means more steel to help meet all-time high defense and domestic demands. Your country NEEDS it!

Today your DORMANT SCRAP* commands high prices.

HOW TO TURN SCRAP INTO MONEY...

with an organized dormant-scrap round-up in your plant:

1. Appoint a top executive with authority to make decisions to head the salvage drive.
2. Organize a Salvage Committee and include a member from every department.
3. Survey and resurvey your plant for untapped sources of dormant scrap. Encourage your employees to look for miscellaneous scrap and report it to the committee.
4. Sell your entire organization on the need to scrap unusable material and equipment.
5. Prepare a complete inventory of idle material and equipment. Tag everything not in use.
6. Start it back to the steel mills by selling it to your regular scrap dealer.
7. **KEEP AT IT!**

* Your DORMANT SCRAP is any obsolete, broken or wornout and irreparable machinery, tools, equipment, dies, jigs or fixtures, etc., that may encumber your premises. These, in the language of steel, are *scrap*, vital to steel production, and hence convertible into cash.

Steel is normally made from scrap and new pig iron in about a 50-50 ratio. The use of scrap means *better* steel, *faster* . . . because scrap has already undergone one refining process. Today under pressure of domestic and defense demands, the steel industry is consuming purchased scrap at the rate of 100,000 tons per day . . . an all-time high. Your dormant iron and steel scrap is *urgently* needed.

Round-up and sale of your dormant scrap NOW will benefit you, all steel users, and our country by:

1. Keeping the steel furnaces producing at their highest rate in history.
2. Conserving our vital iron ore reserves. The *more* scrap used in steelmaking, the *less* ore needed.
3. Making *better* steel, *faster*.

INLAND

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

THE IRON AGE
FOUNDED 1855
TECHNICAL ARTICLES

How to get the most from your lathes—

Drives,

Tool Holders,

Tool Grinders,

Special Cross Slides

No. 1 of a series

By John E. Hyler
John E. Hyler & Associates
Peoria, Ill.

Automatics and turret lathes are wonderful, but don't neglect the possibilities of your engine lathes. You can add variable speed power units, ingenious tool-holding devices, special cross slides, and similar equipment to increase versatility and production. Proper use of carbides and of tool grinding devices helps improve lathe performance and extends machine capacity.

Whether old or new, standard or special, large or small, any lathe rates consideration to determine whether improved auxiliary equipment will make it more efficient, more versatile, or better adapted to its work. Many lathe users will find it profitable to review the many attachments and auxiliaries available for their lathes.

Many lathes of older model fit into today's picture better when provided with a more suitable drive. Reduction of the amount of line shafting, countershafting and long belt drives in industry has developed interest in use of suitable lathe drives which may be substituted.

Lathes requiring not more than 3 hp have been provided with drives attached to the rear of the machine with a special bracket. At the top of the bracket is a gear case and a motor-mounting plate, with an adjustment for proper tension on a short belt drive leading directly to the headstock. The gear case houses a sliding-gear transmission, making three speeds available through a simple gearshift lever. Lathes of 3-step cone pulley or double back geared type are very efficiently motorized in this way.

Stepless variable-speed drives are available for adding to existing lathes. They may or may not be positive drives. Drives infinitely variable within their scope and positive in action are preferred by many.

The basis of drive in a unit of this kind is a self-pitching chain, which operates on radial grooves made in conical wheels. Control is by means of an incorporated control screw, which is turned in one direction to spread one pair of conical wheels and draw the other pair together, reducing the speed, or is turned in the other

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direction to increase the speed. In some cases, this control screw is fitted with a handwheel. In others, a separate control motor does the work, with remote control by pushbutton being employed.

Each composite link in the chain houses a cage, in which are carried a series of thin steel slats or laminations. Within limits, these slats can freely slide transversally, individually, or collectively. Thus the chain is self-forming as well as self-pitching where it engages the grooves and teeth of the conical wheels, and firmly grips the wheels to form a positive drive at all times.

New cutting edge always available

Insert-type carbide tips, which are held on end in vertical or near-vertical position, may be round, square, oblong or triangular in section. One great advantage they have is that a new cutting edge is obtainable simply by loosening the tip in the holder and turning it. An adjusting screw, working up through the bottom of the holder, allows setting the insert for and supporting it at proper height, compensating for what is ground away in sharpening. Special equipment is available for grinding these inserts.

Methods of holding both standard and special tools are worthy of considerable attention. Examples are universal tool posts for holding flat or square tools, which provide convenient means for adjusting the tool in all directions. Some of these universal screw-machine toolposts often are adapted for engine lathe use by employing a special raising block to compensate for difference in height.

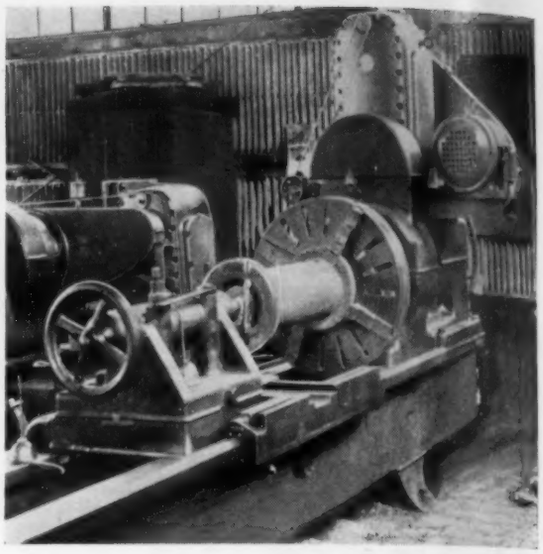
Special tool holders pay off

Out-of-the-ordinary tool holders in use include a holder in which the tool-clamping screw, instead of having its axis in a vertical plane, is set at 45° in a tilted type of tool holder head. There is a slot through the tool holder head, under the screw, and a special jaw is set in the slot. When the screw is tightened, the jaw, which has a female V in its under side, engages a corner of a square tool. This clamps the tool bit across a diagonal, driving it into the opposed corner of the tool-bit opening in the head.

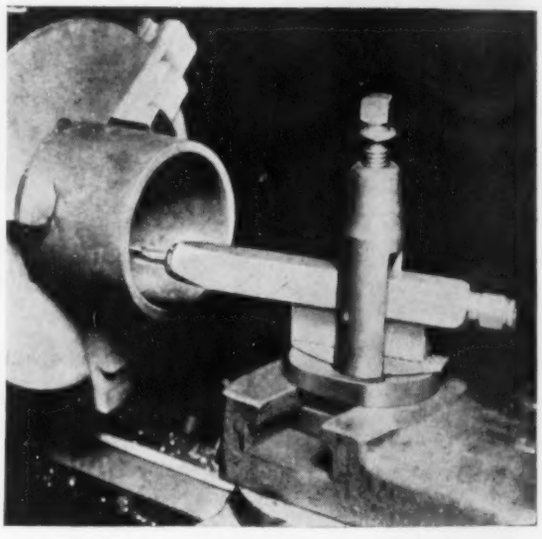
The advantage of this clamping layout is that the same tool holder can be used for holding four or more sizes of either round or square tool bits. And the tilted position of the tool-holder head gives an operator a better view of the cutting edge, and often simplifies getting coolant to the cutting edge of the tool.

A highly interesting tool holder is of collet type. By inserting the tool in the collet and drawing the collet up tight, one has a relatively small tool which can be adjusted around its axis with the collet. It is also readily adjustable for projection.

Using a knife-edge or round-nose tool with a



VARIABLE SPEED DRIVE units have been added to modernize these lathes. Units are mounted vertically at far end of each lathe. Drive motors are at right of units, speed-adjusting wheel at left.



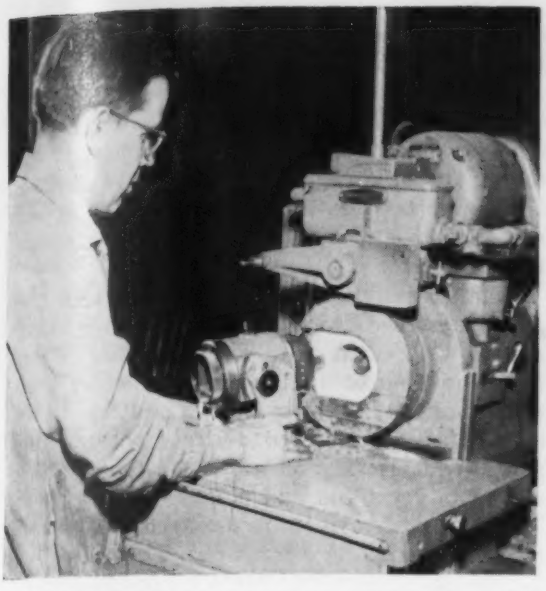
TOOL HOLDER, of collet type, in use on a boring job.

hollow-ground top for turning or facing, clearance is obtained as needed by simply rotating the collet. The tool holder has a tapering front. When this is set at a slight angle, one can bore fairly deep holes with ease. A ground threading tool can be held at required projection for accurate internal thread cutting.

Square threads can be machined by grinding the tool to produce the thread desired. The collet is then simply rotated to agree with the proper helix angle. In addition, this type of holder will probably support drills, reamers and countersinks.

While most chipbreakers are directly ground into lathe tools on special grinders designed for the purpose, some of them are of the mechanical, clamped-on type.

A clamped-on chipbreaker has one advantage



SPECIAL GRINDER for single-point tools provides relief angle constant in direction of feed on curved tool edges, works from template.

CHIPBREAKER GRINDER fitted with special collet attachment for grinding solid carbide inserts. With attachment holding insert, sharpening and chipbreaker grinding can be done on inserts of any shape.

in particular. It may be adjusted for effective chipbreaking width. It is a metal block with an angular face, clamped tightly to the top surface of the tool. The top surafce of the tool, and the lower surface of the chipbreaker must fit together perfectly. Otherwise metal particles may drive in between the two and cause trouble.

There is a tool holder designed to allow use of such a chipbreaker in conjunction with a triangular solid carbide tool bit. The tool holder has a V groove machined along a part of its length, on the end toward the work. The triangular-section carbide tool bit will fit into this groove and seat solidly. The chipbreaker is then tightly clamped down.

The clamping action holds the chipbreaker tightly and also holds the tool bit firmly in its seat in the tool body. By setting any adjustable chipbreaker closer to the cutting edge of the tool bit, the chip is made to curl more tightly.

For tool bits of triangular cross section a special tool holder contains a hardened steel pad at the base of the tool opening. There are two curved-relief grooves in the top surface of this steel pad. One groove is positioned to the right and the other to left of center. The lower corner of the tool bit can be placed into either of these grooves, providing means for tilting the bit to right or to left. Bearing on the top surface of the tool bit is a flatted round which the clamping screw engages. This round-section member simply revolves slightly to right or left in the holder when the position of the tool bit is changed, allowing the flat at the bottom to follow, and to bear squarely down upon the top surface of the tool bit in either position.

Diamond cutoffs save time

At least one special diamond cutoff machine has been developed to cut broken sections off carbide tools as need appears, without grinding. The same machine will also cut standard carbide blanks down to any desired size. It saves a large amount of time which would be required for grinding down tools, and saves many carbide tools that would otherwise have to be scrapped.

In grinding thread angles on lathe threading tools, some use a special fixture in the form of a steel block with an opening into which one end of the single-point tool is clamped. This block has compound angles marked on its outer surface such that by laying one of them down on the table of a surface or tool grinder, the tool is automatically held at correct grinding angle. The block can either be clamped to the machine table or used with a magnetic chuck.

Template used for single-point grinding

Another means for single-point tool grinding, which insures that precisely the type of point desired will be produced, is the template method. This is often based on use of a special tool-bit grinding machine that actually uses a double-sized template of the desired tool point.

A setting gauge is used for setting the point of the tool out just far enough that it will be properly formed and sharpened without removing any more metal than necessary.

While templates may be developed and made from drawings, the machine incorporates facilities for reversing the process, or making a template from a tool when desirable.

A special type of single-point tool grinder provides facilities for generating, reproducing and maintaining relief angles which are constant when measured in the direction of feed. On the conventional grinder, relief angles produced on portions of a tool having curvature are constant, measured radially, but are far from

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constant in direction of feed. Thus the conventionally-ground tool does not have uniform support for the cutting edge at all points.

This grinding machine employs templates from which tools are generated, a tilting table which is set to required angles by the sine bar principle, and a universal tool holder that moves unrestricted on the surface of this table, which also utilizes the sine bar principle for setting the angle of the tool within the tool holder with respect to its base. By proper compounding of the angle at which the tool is set in the holder with the angle of the grinder table, one is enabled to grind the tool to proper form while simultaneously generating a relief angle constant in the direction of feed.

Chipbreakers can be ground into solid carbide inserts in a manner similar to grinding them in brazed-on tips. Round inserts are usually arranged in such manner that their ends must be slightly concave or dish ground in order to provide a neutral or positive rake angle, as required. In order to do such grinding on the end of a round insert, the insert must be held in a collet-type fixture and revolved on its axis by power while being ground by a diamond finishing wheel.

Collets used on chipbreaker grinders

Given a suitable collet-type fixture, the actual grinding can be done on a standard surface grinder. Some chipbreaker grinders are provided with a collet fixture to be used for this kind of work. One such fixture incorporates its own motor for revolving the insert, and can use different collets interchangeably for grinding different forms of inserts.

Chipbreaker grinders are chiefly used for grinding proper chipbreakers in carbide tips which have been brazed to shanks. They provide means for holding a tool at the correct angle and for producing chipbreakers at precisely the desired widths, depths and angles.

A diamond wheel can be set up in a lathe, and a toolpost grinder used for dressing it, though there are some methods of dressing which make it unnecessary to remove the diamond wheel from the grinder.

Indexing toolposts speed output

Turret-type toolposts are often applied to engine lathes for speeding production on jobs involving use of more than one tool. Such toolposts are arranged to index, and are nearly always designed to carry four tools instead of one. On many two-tool setups, duplicate tools are set up, allowing uninterrupted production to continue twice as long.

Some of these units are designed for use on top of the lathe compound, mounting in the T-slot, while others replace the lathe compound and attach to the bolt circle on the cross slide. The first directly partakes of the versatility of the lathe compound itself. The second type is inherently more rigid.

One line of turret toolposts mounting on top of the lathe compound has facilities for mounting a cutoff tool on one of the four sides of the turret. In this way, only a minimum of space is required between the lathe chuck or collet and the cutoff tool, making it possible to take advantage of greater rigidity in the work.

Another line of turret toolposts has been specially designed to offer better-than-ordinary support to a cutoff tool. The cutoff tool in this case is supported in two grooves, which positively locate it in correct vertical position. Under the top flange, a grooved steel pad is used. This pad provides plenty of width for the clamping screws to get a full and positive bearing on it. These toolpost turrets are designed to mount on the compound.

Hex tool turret mounted on cross slide

Some toolpost turrets are self-indexing, in the sense that only one hand is required for operation. Pulling one direction on the lever both unlocks turret and indexes it to next position. The operator then pulls the lever in the opposed direction, which locks the turret.

Some lathe manufacturers have developed facilities of this kind for their own machines. One has a square turret toolpost for mounting on the compound, and another which is designed to replace the compound, mounting on the cross slide, and providing three indexing positions for each tool. A third is in the form of a hexagon tool turret for mounting on the cross slide. This unit provides two indexing positions for each tool.

Most toolpost turrets have indexing motion around a vertical axis. One toolpost turret differs from this design; it mounts four tools and indexes them in a vertical plane around a horizontal supporting shaft. The advantage of this is the facility with which it may be adjusted for different height values. It can be adapted for

COMPOUND REST, at right angle to cross slide, being used to turn down a small electric motor armature.

mounting either on a lathe compound or on the cross slide. It can be quickly and accurately adjusted to any desired pitch or height in relation to the lathe center line, without disturbing the setup.

Special cross slides and special compound arrangements provide an operator with extra tooling and with greater lathe varsatility. One arrangement incorporates an extended cross slide mounting a special adjustable rear tool rest, in addition to the standard compound. This layout is often highly valuable, providing an extra and adjustable tool in back.

Special lever-operated cross slides which mount on the compound have been developed for engine lathes, providing rigid, adjustable toolholding blocks both front and back. Moving the cross slide backward and forward brings first one tool and then the other into cutting action, always in the same registration.

Cross slides of this general type are sometimes referred to as cutoff cross slides, because one of the tools they carry is generally a cutoff tool. However, they often accommodate square cutter bits for turning, forming, recessing and facing, as well.

Some manufacturers of light lathes provide two different types of lever-operated cross slides. One of these carries a circular forming tool at the front and a cutoff tool at the back in most instances. Thus it is adapted for rapid forming and cutting off on relatively light work.

The other cross slide also provides a short longitudinal movement for the front toolblock. The composite slide has two levers. Using one lever, front toolblock can be fed longitudinally a distance not exceeding 1½ in. for turning. After this, the second lever is used to bring the cutoff into action from the rear. The device is designed for straight turning and rapid cutting off.

One interesting development is a double compound with power angular feed. It consists of a cross slide on which are mounted two separate compound rests, one in front and one in back. Power angular feed can be applied to both rests, in or out, simultaneously. Or power angular feed may be applied to either of the two rests completely independent of the other.

This arrangement is advantageous for simultaneously machining both angles of bevel gears and many other kinds of double angular work. In cases where it seems expedient, either or both compounds can be used as standard compound rests without power feed. A stop mechanism is incorporated by means of which the power feed of both slides may be automatically disengaged at any predetermined point.

Oil mist solves lubrication problem

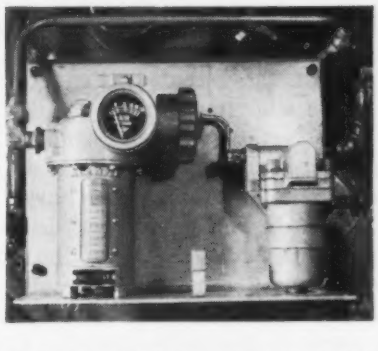
Lubrication with a mist of oil and air has resulted in substantial savings in an application at Ford Motor Co.'s River Rouge plant.

The machines in question are specially-designed Foote-Burt 5 way porthole drilling machines, used in drilling motor blocks. Each has five heads, two of which present problems in lubrication. These are the two heads which operate diagonally downward.

Each of these heads has four spindles. Because the spindles are so close together, it is impossible to insert adequate packing to prevent escape of oil around the spindles. Because of the poor oil seal, it was necessary to supply about 3 gal of oil per 8-hr shift to each head.

Early this year, Stewart-Warner Oilmist units were installed on these heads. Oilmist lubricators utilize plant compressed air to atomize oil, forming a mist which is carried through tubes to the drilling head housings. The particle size is approximately 20 microns. These are so small that they remain in suspension in the air, with little or no tendency to collect on the tube.

However, the particles are picked up on moving surfaces, where lubrication is needed. Moving surfaces pick up oil from the mist as, and only to the extent that, they need it. Thus lubrication is continuous and not excessive. An air pressure of about 7 psi is maintained in the system, so that the pressure in the housing is always above atmospheric. This keeps air from entering the housing, and so prevents entry of foreign material which might damage the bearings.



OILMIST device as installed on Ford Foote-Burt machine. Pressure regulator is at right, atomizer and oil container at left. Machines run cooler and save power.

Using the Oilmist system, each head on each machine uses only 3 oz of oil per 8-hr shift. With Oilmist, over a given period 33 gal were used as compared with 1400 gal for the same period using the old system. In addition, there are savings due to the fact that the machine does not constantly have to be shut down for replacement of packing. It is expected that experience over a longer period of time will show much longer bearing life. The machine runs cooler and uses less power now, probably because there is no liquid oil in the housing to be churned about.

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To save money conserve alloy

repin your furnace belts

By Roger Williams
Plant Manager
Commonwealth Industries, Inc.
Detroit

About 90 pct of the alloy links in a furnace conveyor belt can be reused. Heat treat shops can take the belts apart, install new pins and get the furnace back in operation at little expense for parts and labor. High cost of new belt and long furnace downtime are eliminated by replacing pins.

With the current shortages of strategic materials growing more acute, heat treaters are seeking new means for extending equipment life and conserving nickel and other critical alloys. One of the recent bottlenecks in heat treating is the alloy links that make up the conveyer belts in certain types of furnaces. These alloy castings have become increasingly more difficult to obtain, and some shops have furnaces down long periods waiting for belt delivery.

Commonwealth Industries, Inc., Detroit, operates two Surface Combustion atmosphere hardening furnaces equipped with belts 36 in. wide. The belt, made by Standard Alloy Co., Cleveland, is about 50 ft long, mounted on drive drums with 20 ft between centers. The cast 35-15 alloy links are 4 in. long, pinned with ¾ in. round stock. Pins are 35-15, with 0.30 to 0.50 pct C.

A dry cyanide atmosphere is most generally used in one of the furnaces at Commonwealth. The usual operating temperature is about 1650°F, somewhat higher than is customarily used on such furnaces. Higher temperatures and the cyanide atmosphere shorten belt life to an average of about 6500 hr.

Failure occurs when the pins start to "crankshaft"; as this happens, the belt lengthens to the extent that the links jump the sprockets on the drive drums. The general practice is to pull the belt off and replace it with a new one costing about $5000.

Upon examining such a "ruined" belt, it was found that more than 90 pct of the links were still in good condition and could give many more hours of useful service. Worn pins were easier to replace than the entire belt.

Belt cut apart

For rebuilding, the used belt is taken apart by melting the pins with a cutting torch. The old belt is cut up about 4 ft at a time, and later reassembled in 4-ft sections to facilitate handling. Links with excessive wear should be sorted out.

The links have some tendency toward growth in service, the amount of which varies in different portions of the belt. This does not present any problems if the links are placed in about the same relative position in the newly-repinned belt that they occupied in the used one. This gives a uniform load on the pin, adds strength, reduces pin wear.

Whatever new links are required should also be placed together in the belt for greater uniformity and ease of assembling. Links are matched up in series of two, with gradual size graduation to the new links. Care in the small amount of sorting and matching required will be reflected in greater life of the repinned belt. Many of the links in the belt now in use at Commonwealth have been running about 18,000 hr.

Cost of the repinning job will vary in different shops, but the average for a 50-ft belt 3 ft wide should be something near or below $800. This is calculated to include totals for all mate-

ALLOY steel links of furnace belt conveyor are stripped from warped pins and reassembled at Commonwealth Industries, Inc. Operation saves time, cuts costs.

rials and labor, on the basis that two men working 8 hr per day can complete the job in 5 days. The figure is still substantially below the price of a new belt, in addition to the fact that more than 3000 lb of alloy can be saved and reused.

Ready-made pins are also in scarce supply these days, so straight-rolled stock is purchased for this purpose. An alloy washer is then welded onto the end of each piece at assembly.

Less tension extends belt life

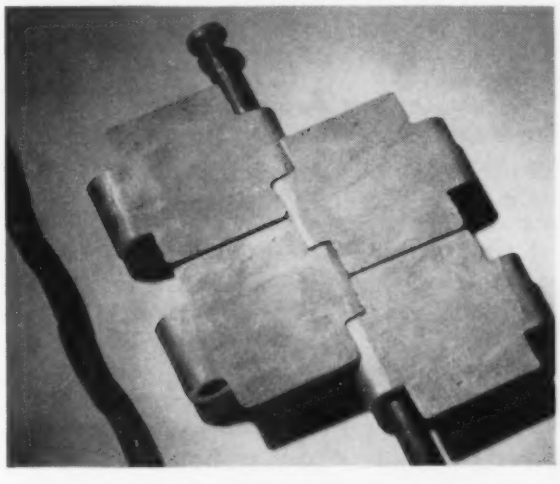
Other considerations in furnace operation can also substantially contribute to longer alloy life. Furnace belts will last longer if the tension on the belt is kept down. Tension should be taken off entirely when the belt is not working.

Alloy used in a dry cyanide atmosphere is subject to a carburizing action, resulting from the soot deposited in the furnace during operation. The life of alloy parts working in this type of atmosphere can be greatly improved if the atmosphere is removed from the furnace at frequent intervals and air is blown in. The air burns off the soot and reoxidizes the alloy parts.

Care must be taken to assure that the volume of air introduced into the furnace is held low enough to prevent overheating as the soot burns. For reasons of safety, it is important that the atmosphere piping on the furnace be so arranged that it would be impossible to have both atmosphere and air entering the furnace at the same time. Good practice is to drop the furnace heat to about 1400°F for the burnout.

Failure in the radiant tubes of the furnace invariably occurs first at the return bends, where they burn through from the turbulence and heat of the flame. These tubes can also be repaired. Small holes in the "Surface" type of radiant tube are not quite so serious and will not result in atmosphere contamination, because these tubes fire under suction; holes in pressure fed tubes, however, produce leakage into the atmosphere.

Suction fed tubes can be repaired without shutting down the furnace. Small holes are welded up with alloy rod. When the damage becomes more severe, the return bend is usually cut off the tube and a new one welded on; by installing new return bends in this manner, the straight part of the tube can be used for as much as 12,000 hr. The furnace must be shut down for repairing pressure fed tubes.



WASHER welded to new pin makes assembly of links easier. Note old, deformed pin removed from belt at left.

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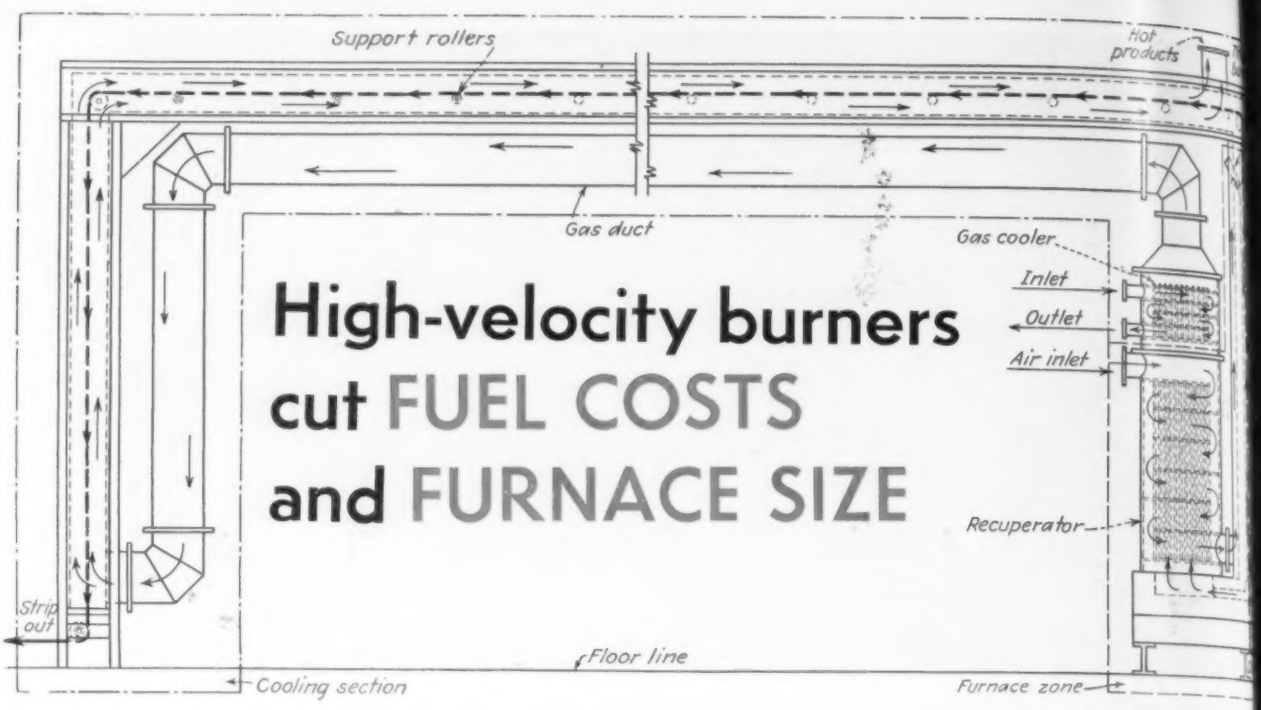

High-velocity burners cut FUEL COSTS and FURNACE SIZE

by L. C. Peskin
President
Thermal Research & Engineering Corp.
Conshohocken, Pa.

FIG. 6—Design of projected convection-heated furnace for the continuous annealing of steel strip.

Part II

High-velocity, convection heating burners can be used in open hearths and ore beneficiation. A continuous strip annealing furnace has been designed with an estimated efficiency exceeding 80 pct. High surface emissivity has little effect on convection furnace length. With low emissivity, such equipment will be considerably shorter than comparable radiation furnaces.

The new burner's design and operating characteristics mean that less than theoretical air can be used while still obtaining combustion gases free from carbon or soot. A reducing gas is formed, the relative amounts of carbon monoxide and carbon dioxide depending upon the fuel and the air deficiency. Such an atmosphere, obtained with a diesel fuel oil, is shown in Fig. 5. The operation of burners giving this type of atmosphere is now receiving close study in the pyro-metallurgical field for ore beneficiating.

This development of a combustion system for high temperature convection heating with extreme heat release, first publicized herein, is sufficiently new and important to justify consideration for application to the various processes of the metals industry. All the principles in combustion and heat transfer discussed are applicable to various furnace types and processes throughout the metal industry. While many applications suggest themselves, a few examples are of particular interest to the steel industry.

A majority of the present processes for refining metals, as in the case of the open hearth, employ combustion methods whose shortcomings and deficiencies are only too well known. Improved techniques have been sought in vain.

It has been suggested that convection-type burners such as the Thermal may be used to augment the present regenerative method of heating the open hearth. It is expected that faster meltdowns, by direct impingement of the com-

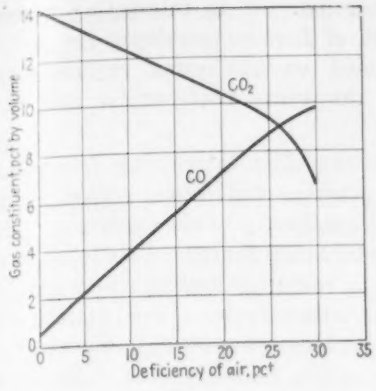

FIG. 5—The effect of air deficiency on the carbon monoxide and carbon dioxide content of a furnace atmosphere obtained with diesel fuel oil.

bustion gases on the initial charge, should be possible to achieve. The possibilities of new furnace designs utilizing the special properties available are numerous. Applied to existing installations where flame length is a problem in securing efficient heat transfer, higher heat release with extremely short flame could be obtained. This would provide a means of improving efficiency by delivering the heat to the immediate areas where heat transfer is desired.

Furnaces used for reheating materials to be rolled, forged or otherwise reduced or formed probably afford the most effective way of demonstrating the possibilities of high-temperature convection heating to the steel industry. The principles of heating with high-velocity combustion gases can result in economies not now possible by radiation systems.

Offers several advantages

Simpler furnace designs, the use of recuperation, more general and uniform transfer of heat, non-oxidizing atmosphere can all be combined to produce simple, high-speed equipment. It offers production at low investment cost with low operating and maintenance cost, as well as flexibility of fuel and maximum safety.

The annealing of continuously rolled strip is at present a batch operation involving large investments in space, equipment and time. Continuous methods have long been investigated. However, there are various operating problems, some of which are extremely difficult. In the case of the fastest techniques now available, such as pure radiation, resulting costs are high. The principles involved in building suitable equipment for the proper utilization of the Thermal method of convection heating are identical to those used in other applications.

A preliminary layout of a prototype strip steel reheat furnace is shown in Fig. 6. It is designed to heat 12 x 0.030-in. steel from 70° to 1450°F at a rate of 100 fpm. This drawing also includes a preliminary layout of a cooling section for the bright annealing of the strip.

The room temperature strip enters the furnace at the lower right side and is conveyed through the vertical furnace by the powered rolls. The guide rolls are stainless steel and the air-cooled shafts are supported by external bearings.

The combustion air enters the unit at the left side of the furnace zone, passes through a recuperator and then flows upward around the furnace where it enters the burners. This air, which flows counter to the high temperature products, largely eliminates heat loss to the surroundings and is preheated during its passage. The preheated air enters the burners, is mixed with the fuel (gas or oil) and, after combustion, passes down the central section of the furnace flowing counter to the moving strip steel.

Convection plays a very important part in heating the steel. The narrowing passage, which occurs as the combustion products cool, maintains a high convection heat transfer coefficient. Near the high temperature end of the furnace, the walls reach a temperature sufficient to cause radiation which augments the convection heat transfer. This effect is nearly negligible at lower temperatures where convection is predominant. A schematic diagram of the furnace with approximate temperatures is shown in Fig. 7.

Could handle strip up to 50-in. wide

The overall floor length of the prototype furnace is approximately 10 ft, the height is 24 ft, and the width is 2 ft, including base. When operating at 100 fpm on 12 x 0.030-in. strip, this unit heats 3.72 tons of steel per hr. Extensive calculations show that it would be feasible to apply convection heating equipment of this type to strip as wide as 50 in. and at speeds as high as 1000 fpm. An increase in furnace size would, of course, be required.

The recuperator has been designed to reduce the stack temperature to 550°F. With negligible heat losses, the efficiency will exceed 80 pct. The efficiency is, however, strongly influenced by the percent of theoretical air supplied to the burner. The preliminary calculations are based on 95 pct of theoretical air (5 pct air deficiency) to inhibit oxidation of the steel.

If desired, the burners can be operated at lower percentages of theoretical air to produce reducing atmospheres. This can only be done at

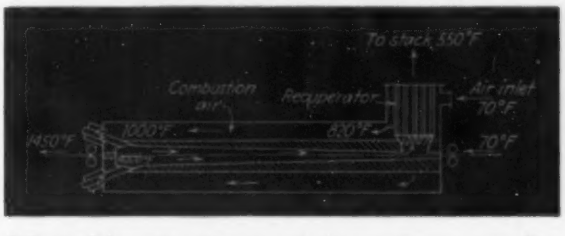

FIG. 7—Schematic diagram of the continuous annealing furnace for steel strip showing operating temperatures.

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the expense of efficiency. The furnace as shown would require additional burners for such operating requirements and some increase in height. All of the calculations are based on preheated air. If the air were not preheated larger furnaces operating at lower efficiencies would result.

The control of this furnace is readily accomplished by controlling the burners, either together or selectively. The energy output can be controlled from full output to 25 pct of full output.

Applicable to remelting of tinplate

The furnace is applicable to lower temperature processes such as the remelting of tinplate, with corresponding increase in capacity or decrease in size.

In addition to the furnace section, a strip cooling section is shown. Since controlled atmosphere is necessary for cooling in the manufacture of bright annealed steel, it is proposed to cool the products of combustion from the recuperator discharge temperature of 550°F to about 250°F. A water cooler located directly above the recuperator accomplishes this. The cool, oxygen-free gas then acts as the strip-cooling medium.

The preliminary design, as indicated in the drawing, shows the cooled combustion products flowing counter to the hot strip in a single horizontal and vertical pass. The length of this cooling passage is dependent on the permissible rate of cooling of the steel to obtain the desired metallurgical properties. It is expected that this criterion will require a longer length than the minimum necessary for convective cooling and will therefore control the length of the cooling passage.

Contours depend on available space

The contours of the cooling passage are largely dependent on the space available in a particular installation. If overhead space is not readily available, for example, a multi-pass vertical unit of about twice the floor space requirement of the furnace section could be designed. In the event that highly reducing atmospheres are maintained in the heating and cooling sections, considerable carbon monoxide will be present in the gases exhausted to the stack. These products which leave the cooling section at about 1200°F have considerable thermal energy. They may be used much as blast furnace gases are used—as a low grade fuel.

In recent years, considerable attention has been placed on furnace systems utilizing substantially pure radiation heat transfer for speeding up the operation and reducing the size of the installation. It is interesting to compare the length of furnace developed for such equipment, based on the same requirements and utilizing the same fundamental analytical approach.

One of the most interesting features of the high-temperature convection system is its relatively low sensitivity to the surface emissivity of the material being heated. This is in sharp contrast to the radiation system where emissivity is an all-important factor. For example, with a material surface approaching a black body condition (emissivity of unity) the radiation system will require a minimum furnace length for bringing the metal up to temperature. However, as the emissivity decreases, the furnace length for the radiation system rapidly increases. It approaches impractical lengths as the surface becomes more nearly mirror-like in its reflective quality.

Radiation, convection affect heat transfer

For the convection system, heat transfer to the material is divided between radiation and convection. The proportion of total heat transfer by each mechanism is dependent among other things upon the shape of the material being heated, relative to the shape of the furnace enclosure. However, for the sheet material in question, the heat transfer to the steel is accomplished in the convection system approximately 40 pct by radiation and 60 pct by convection for steel emissivity of 0.6.

The radiation is most important at the high-temperature end and nearly negligible at the low-temperature (strip inlet) end. Gas radiation is included in the 40 pct figure and is less sensitive to emissivity than is the direct radiation from the wall.

If the emissivity of the strip is decreased, the length of furnace required is affected very little in the convection system. This may be seen by considering the equilibrium wall temperature as a function of emissivity. As the emissivity decreases, less heat is radiated from the walls to the strip, so the wall temperature increases to maintain thermal equilibrium. But as the wall temperature increases, the radiation to the strip increases and largely compensates for the decrease in emissivity of the strip.

Emissivity decrease has little effect

This effect is also present for the radiation system but, since the maximum safe ceramic temperatures are initially assumed, an increase in wall temperature cannot be tolerated. Therefore, the output of the radiating burners must be decreased. The convection system has the additional obvious advantage that the convection heat transfer component is unaffected by emissivity. If constant wall temperature were maintained,

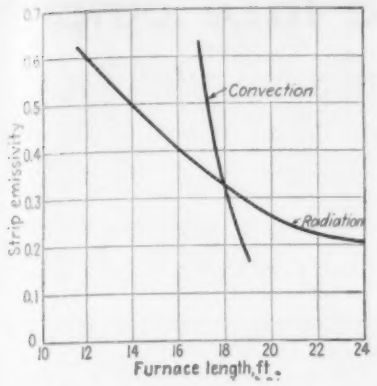


FIG. 8—The effect of surface emissivity on the length of both convection and radiation furnaces.

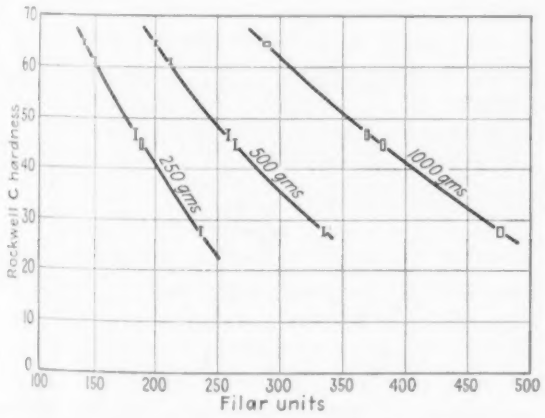
the increase in length for a decreased emissivity would be small.

Thus, while the radiation system may result in a somewhat shorter furnace than the convection system for high emissivity materials, the convection system furnace increases only a small amount in length and for lower emissivity surfaces, becomes appreciably shorter than a radiation furnace of the same capacity. This is shown graphically in Fig. 8, plotted for the furnace proposed but applied to the heating of strip steel having surfaces of various emissivity characteristics. The advantages of the convection system for processing steels having bright surfaces (bright annealing, tin remelting) are obvious.

Chart correlates rockwell c and filar units

For the production shop using the Tukon hardness tester, a handy chart for conversion to Rockwell hardness is used at Timken-Detroit Axle Co., Detroit. The laboratory and the whole shop were geared to RC so that Knoop hardness numbers were inconvenient.

The metallurgical laboratory ran Tukon tests on standard RC test bars and correlated the two hardness values at three load levels as shown on the graph. From this curve they derived the conversion table. The table is not accurate enough for research purposes but is believed within the accuracy of the Rockwell test itself. For straight production control, Timken-Detroit has used this system to advantage since 1947.



GRAPH shows correlation between Rockwell C and Filar Units at three load levels. Tukon tests on standard RC test bars were made in laboratory of Timken-Detroit Axle Co.

TUKON HARDNESS TESTER
CONVERSION OF FILAR UNITS TO
ROCKWELL "C"

1000 g Load		500 g Load		250 g Load	
Filar Units	Rc	Filar Units	Rc	Filar Units	Rc
280	66.5	190	67.5	135	67
285	65	195	66	140	65
290	64	200	64	145	63
295	63	205	62.5	150	61
300	62	210	61	155	59
305	61	215	59	160	56.5
310	60	220	57.5	165	54.5
315	58	225	56	170	52.5
320	57	230	54.5	175	50
325	56	235	53	180	48.5
330	55	240	51.5	185	46.5
335	54	245	50	190	44.5
340	53	250	48.5	195	42.5
345	52	255	47.5	200	40.5
350	51	260	46	205	38.5
355	50	265	44.5	210	37
360	49	270	43	215	35
365	48	275	42	220	33
370	47	280	40.5	225	31.5
375	46	285	39	230	30
380	45	290	38	235	28
385	44	295	36.5	240	26.5
390	43	300	35.5	245	24.5
395	42	305	34	250	22.5
400	41	310	33		
405	40	315	32		
410	39	320	31		
415	38				
420	37.5				
425	36.5				
430	36				
435	35				
440	34				
445	33				
450	32.5				
455	31.5				
460	30.5				
465	30				
470	29				

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Brass powder parts aid fuze output

High speed production of precision fuze components from brass powders, now past the experimental stage, is expected to spur wider use of the powder metallurgy process in a variety of other important applications, ordnance and essential civilian items alike.

The precision fuze component that brought the process into sharp focus for defense production officials is the M21A4 booster rotor—a small but vital non-symmetrical, cam-like part weighing about 0.8 oz. Powder metal fabricating plants are now producing the brass rotor blanks at a rate of approximately 1000 per hr per set of tools.

The part, as pressed and sintered, requires drilling of a radial hole and, in some instances, a transverse counterbore. There are two other transverse holes which may be produced in the pressing operation. A slot is produced at the time of pressing. As a result, a saving in production cost as compared with other methods is anticipated.

During World War II, the M21A4 booster rotors and those of the M20 series booster, were made from extruded 70-30 brass bar stock. Although use of powder metal parts as an alternative was permitted as far back as 1944, the present rotor program is the first to involve powder metallurgy on any extensive scale and place it in competition with the extruded stock method of manufacture.

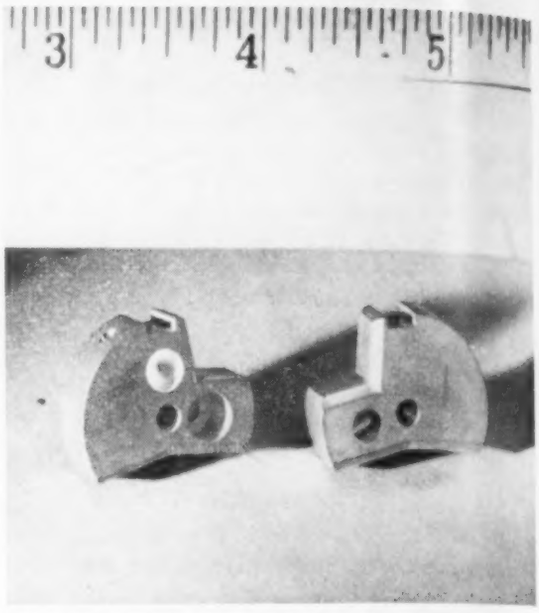
Physicals posed problem

When plans were being made to blueprint the current procurement program for M21A4 boosters, critical evaluation studies by Ordnance engineers at Picatinny and Frankford Arsenals re-examined the matter of whether necessary precision standards for the rotor were practicable with existing high production rate powder metallurgy techniques.

However, density limitations, which called for 100 pct theoretical specific gravity (8.53) of the original 70-30 brass specification, appeared to preclude the use of powder metal parts. Tests with parts pressed from brass powders of 70-30 composition yielded specific gravity values in the range of 7.7. It became obvious that high values could not be produced except under costly working conditions.

At this point another stumbling block appeared. Brass powder of 70-30 analysis poses knotty production problems because of its relatively narrow sintering range—880-900°C. Under commercial sintering conditions, control to ±10°C is difficult.

One of the widely used brass powders—a nominal composition of 78.5 Cu, 20 Zn and 1.5 Pb—has a practical sintering range of 860-900°C.—well within commercial standards of control.



BRASS POWDER rotor, a safety device used in shell fuzes. Left view shows top of rotor; at right is bottom view. Production rate is 1000 per hr per set of tools.

Density values of 7.4 or higher appeared to be a practical production line proposition for a part of this design.

Still left unanswered was the question of whether a part of this density could function as required. When a shell is fired, the rotor is normally locked in the unarmed or safety position by a centrifugal pin until after the projectile leaves the muzzle of the gun. At exactly this point, the rotor, which is mounted with its center of gravity off the centerline of the pivot center must rotate under centrifugal force to a precisely aligned or armed position. Here it strikes a stop pin and is locked by further pin action throughout the flight of the projectile.

Preliminary firing tests conducted at Picatinny, indicated that the critical mass requirements which control the centrifugal motion of the rotor could be met consistently. These tests proved further that the high order of impact developed by the action of the stop pin on the rotor was well within the physical properties of properly pressed and sintered commercial 80-20 leaded brass powder parts.

One of the critical safety tests to which the rotor was subjected consisted of exploding the detonator with the rotor in unarmed position. The force of this explosion, of course, shatters the part of the rotor immediately around the detonating charge. However, since the rotor is essentially a safety mechanism, the quadrant-shaped part of the rotor must not shatter or otherwise permit premature detonation of the entire explosive charge.

PURCHASE for PERFORMANCE

by E. S. Page
Director of Purchases
Great Lakes Carbon Corp.
Chicago

Common ordering and purchasing practice often leaves major areas of responsibility for performance of materials and equipment undefined. Unfortunate — and expensive — disagreements then arise between buyer and seller. More comprehensive, yet still practical, approaches to buying practice are described.

There are basic factors influencing purchasing and the manner in which orders are drawn up. Commodities or services always are purchased for what they will produce or for what they will do. That is—purchase always is for performance. The performance desired may or may not be expressed in the order. Someone always is responsible for the performance required, and obtained, from the commodity or service purchased. This responsibility may be in the buyer, the seller or both.

Placement of responsibility requires thoroughness and care in purchase initiation, negotiation, and commitment. Many different types of performance are required. The combinations of quantity, quality, cost, and time are infinitely varied. However, there are two fundamental kinds: A) Ability to accomplish, the usual conception of performance; B) ability to endure, often associated only with "original workmanship and material."

Responsibility requires definition

Assuming capable operation under prescribed conditions, with adequate maintenance, all performance is dependent upon design and original workmanship and material. Every acceptance of responsibility for any part or all of performance, by guarantee, warranty, or other agreement, on the part of either buyer or seller, requires a completely defined responsibility. Agreement on the placing of obligation for action to be taken in the event performance is less than satisfactory is equally important.

Time is the common factor. Performance required and all responsibility must be related directly to the length of time involved.

Despite the necessity of purchasing for performance, many purchase orders make no mention of the word. The commodity is described primarily, and perhaps exclusively, by its physical, chemical, electrical or other properties. That is, quality only is specified.

In such cases, virtually all responsibility for all phases of performance rests with the buyer. Limited performance responsibility may be with the seller due to a specification on size or capacity—for instance, the horsepower of an electric motor. Trade practice in particular industries may grant a warranty on original workmanship and material for a definite length of time.

Let us assume that a pump is required which must perform according to the specifications in Table I. These are functional conditions. Responsibility for their accuracy will rest with the purchaser almost all the time.

So far, nothing has been said about what it takes to do this job. What kind of pump should be used? Reciprocating? Centrifugal? Rotary? What about the type of construction? Materials used? Kinds of bearings? Position of opera-

TABLE I

SPECIFICATIONS FOR PUMP

Capacity	60 gpm
Fluid	Water at 55° F
Suction	Flooded
Discharge head	56.8 psi
Working temperature	Atmospheric
Operation	Continuous

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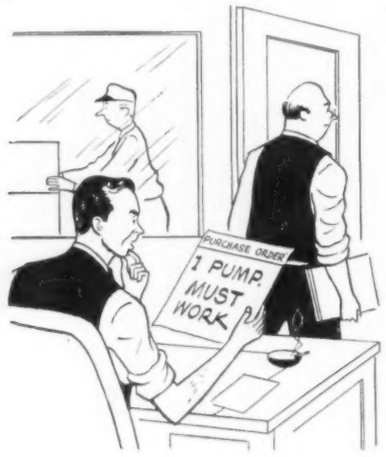
tion? Type of drive? What size and rpm? Obviously there must be a more inclusive specification.

Of course, the buyer and the seller will consult. No doubt the seller will recommend the equipment he believes to be required. However, finally a purchase is made and an order written. At this point all questions concerning responsibility for performance must be settled.

If the buyer purchases only on the basis of what the pump must do then responsibility for supplying suitable equipment for the job will rest with the seller. However, this is unusual. Many suppliers will not sell on such a basis.

If the buyer issues only a specification for equipment—a not unusual practice—then responsibility for the required performance of that equipment definitely is with the buyer. At least in so far as the purchase order is concerned. Admittedly, if the equipment has been recommended by a seller, he may be willing to assume some responsibility for its successful operation. Conjecture enters here, since future business relations and good-will—rather than a clear, written agreement—may be the deciding factor.



The most common practice involves the buyer specifying both performance and equipment. Now who is responsible for performance? Unless the order contains additional points of agreement on this factor, the matter is left in doubt. And frankly, in many industrial purchase orders, the matter never is brought to its ultimate conclusion.

Bear in mind that all suppliers have a great reluctance to assume responsibility for that phase of performance which has to do with the actual results obtained with their machines. This is a perfectly natural attitude. The supplier has little or nothing to do with his equipment after its delivery and has no control over the way it is operated.

As a rule, the seller extends a guarantee for a definite period of time to protect the buyer against defects in original workmanship and material. This guarantee should be written into the purchase order. Here is a responsibility for performance in the sense that it is assured by the seller that the equipment will continue to operate, based on material and the manner in which it has been formed and assembled.

However, is this a guarantee which assures that the equipment will go on pumping water efficiently at 60 fpm under the conditions stated for any definite length of time? Is it a guarantee of lasting performance based on well-engineered design? These are pertinent questions for which an answer is desirable in each instance. It may be difficult to determine at what point design ends and workmanship and material take over.

Let us draw a purchase order which might be typical of industry. The order to a manufacturer might well include the details shown in Table II.

TABLE II

SAMPLE PURCHASE ORDER FOR PUMP

1 - New Model No. 000, single stage centrifugal pump, manufactured by:_____.
   a) To be furnished in accordance with specifications herein, and
   b) To meet the operating conditions described.

Operating Conditions:

1) Capacity	60 gpm
2) RPM	3600
3) Suction Head	Flooded
4) Discharge Head	56.8 psi
5) Working Temperature	Atmospheric
6) Fluid	Water at 55° F
7) Duty	24 hr per day
8) Drive	Motor, direct coupled

Construction:

Ball bearing, enclosed impeller type, complete with steel base plate. Casing and suction head to be close-grained cast iron. Impeller and impeller parts to be bronze. Shaft to be steel (SAE 1035).

Guarantee:

Service:—Manufacturer guarantees the equipment to be free from all defects in workmanship and material. He shall replace without charge, f.o.b. factory, any parts found so defective within one year from date of shipment.

Performance:—Manufacturer warrants that the equipment which he furnishes will have the capacity and will be designed to function satisfactorily as intended under the operating conditions specified.

(Price, terms, delivery, and other conditions are purposely omitted here).

In this sample order, required performance is well specified as to quantity of work to be done. The quality of performance is not specified. That is, the efficiency of operation desired is lacking. It is stated only that the equipment is "to function satisfactorily," which, of course, is vague.

Equipment is closely described—as to size, kind, and type of construction. Manufacturer's model number, in effect, completes the specification. Buyer is responsible for the operating conditions.

Manufacturer is responsible for both design and original workmanship and material. Under these responsibilities, what are his obligations? First, he is to furnish equipment which will perform as specified. But what if it does not?

Here the limits of his obligations are not defined.

Most manufacturers limit their obligations in this respect to the cost of equipment (return of money paid) as a maximum. It may be that the manufacturer will not accept the purchase order without such a limitation. Notice also that the element of time has not been included. Second, the seller is to replace without charge, f.o.b. his factory, any parts found defective within one year from date of shipment. Here the extent of his obligation in materials and time is well defined.

Represents practical compromise

Criticism for the manner in which this order is drawn is not intended. Quite probably it represents a practical compromise between the performance required or desired by the buyer and the responsibilities which the sellers is willing or able to assume. It should be realized, however, that as the order is drawn, the seller has no directly specified responsibility for efficiency or performance or the length of time which the pump will continue to perform as specified (assuming no defects in original workmanship and material).

Let us take for example another typical purchase, which might be an electric motor—10 hp, 220 v, 60 cycle, 3 phase, 1800 rpm, totally enclosed, fan-cooled, squirrel-cage induction type. Let us specify that it is to have a standard NEMA frame, normal starting torque—low starting current. We will assume that the motor is for horizontal operation under continuous duty with V-belt drive.

This is a very common specification for a standard type of electric motor. As the order is drawn, it is the seller's responsibility to furnish a new motor that can meet the operating conditions, which will be constructed as specified and with the capacity and operating

"THE SELLER will recommend."

characteristics required. As specified, the seller is responsible for the quantity of performance (10 hp) and in part for the quality (1800 rpm, normal starting torque, etc.).

As the order is drawn, seller's responsibility for performance is not defined with regards to complete quality of operation (efficiency) or the length of time of any of his responsibilities.

Also, as the order is drawn, seller's obligations for action under his responsibilities are not covered. What are his liabilities in the event that motor capacity is not 10 hp or design, workmanship or material are deficient?

Does all this mean that voluminous orders must be drawn up every time we purchase a piece of equipment, covering and describing the responsibilities of both parties? No. In this day and age a practical approach is a necessity. However, the informed purchasing agent should know all sides of the performance problem, for his use with discretion and judgment. In the final analysis, someone must be responsible and that person's responsibilities should be defined carefully.

Aluminum successfully electroplated on other metals

Electroplating aluminum on other metals, under investigation for years by many research laboratories, has taken a big step toward commercialization by the work of Drs. T. P. Wier and F. H. Hurley of The Rice Institute of Houston, Texas. They have developed, and recently patented, a technique for plating aluminum on other metals using a non-aqueous bath at room temperatures to form a bright, lasting protective coating.

Using a combination of ac and dc current, the developers of this new method have plated aluminum on brass, copper, bronze, lead, nickel and tin as well as iron. Coating deposited showed good resistance to corrosion over an 18-month test period, and articles plated could be bent and twisted without producing breaks in the finish.

Realizing the near impossibility of plating from an aqueous solution, the inventors used an aluminum chloride mixture containing ethyl pyridinium bromide with addition of a protecting amount of benzene or toluene. This plating solution can be used at room temperature, the only precaution being the use of an inert gas blanket in the plating tank. Good cathode current efficiencies are obtainable.

Extensive analysis to establish the various factors required for technical feasibility have so far been carried out at the laboratory bench scale. Results of the investigations are available through the Institute of Inventive Research of San Antonio, Texas.

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What is the strength of aluminum after forming?

By L. V. Omelka
Testing Engineer
Metallurgical Research Div.

and

D. A. Paul
Sheet Mill Metallurgist
Trentwood Rolling Mill
Kaiser Aluminum & Chemical Corp.
Oakland, Calif.

Data on the strength of aluminum alloys after forming show that 52S increases most in yield strength and ultimate strength as metal is stretched during forming. K-150 is next, followed by 3S and 2S. But the rate of work hardening of 52S is also highest. K-150 shows greatest percentage of yield strength increase for a given amount of stretch.

It has long been known that the tensile strengths of aluminum alloys increase with increased amounts of stretching during forming operations. However, to date there has been very little published concerning the relative increases of yield and ultimate tensile strengths of the common forming alloys.

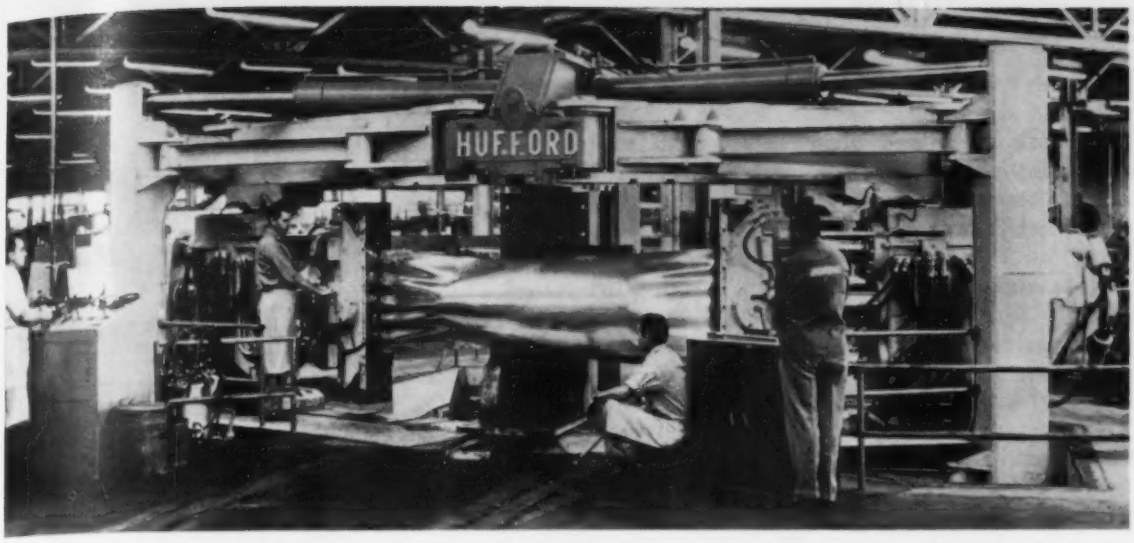
Tests conducted at the Division of Metallurgical Research of the Kaiser Aluminum & Chemical Corp. have rendered data along these lines to guide fabricators of aluminum products in selecting the best alloy for each application.

The alloy most commonly used in the drawing and forming of aluminum products is 3S. It is readily formable, low in cost, and somewhat stronger than 2S, commercially pure aluminum.

Higher strength requirements have generally led to the use of 52S, which is not as easily formed as 3S and costs considerably more per pound. However, another advantage has been gained through the use of this stronger alloy—better finishability.

Although alloy 2S was included in the Kaiser evaluation, it is gradually disappearing from the forming picture except in applications where strength is of secondary importance.

A comparative newcomer to the forming field, alloy K-150, formerly designated 150S, was originally developed by the Kaiser laboratories as an alloy of good forming characteristics, low cost and mechanical properties intermediate to those of 3S and 52S. Its finishability, in a like manner, is in an intermediate range between 3S and 52S.



STRETCH-FORMING a B-47 tail cone section on a Hufford sheet stretch press at Boeing's Wichita plant.

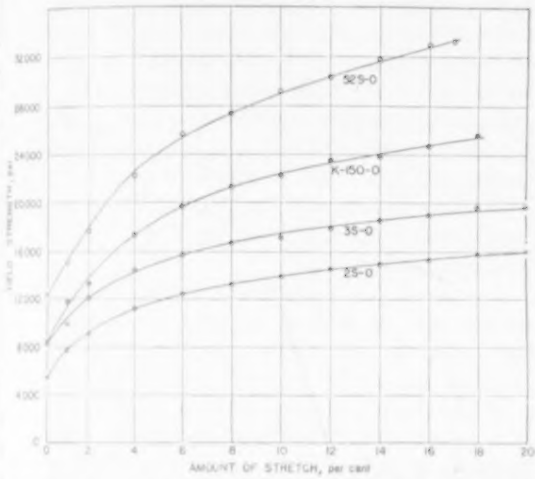


FIG. 1—Effects of stretching on yield strengths of aluminum alloys. Stresses applied with grain, parallel to stretching.

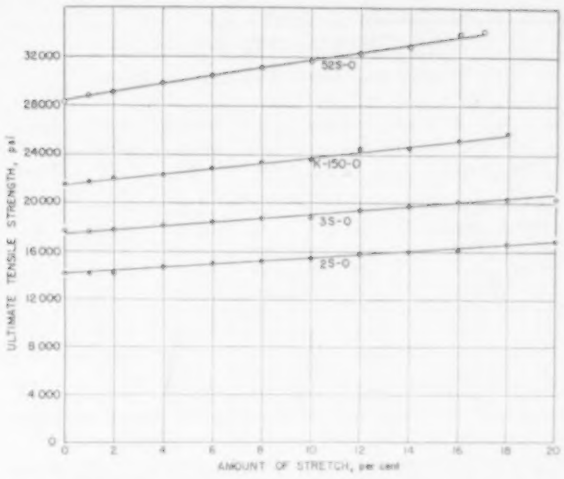


FIG. 2—Effects of stretching on ultimate strengths of aluminum alloys. Stresses applied parallel with grain.

Evaluation of strength after stretching of all four alloys was made on specimens cut from sample strips of 0.040-in. sheet which had been stretched varying amounts in a Baldwin-Southwark testing machine. All alloys were tested in the annealed condition after stretching. The tensile specimens were cut so that the reduced section of the tensile specimen coincided with the portion of the sample over which the stretch was measured. Tensile stresses were applied in the same direction in which the samples were rolled and stretched.

Since certain characteristics are desirable for certain operations and applications, the evaluation was made in terms of yield strength after stretching, ultimate strength after stretching, the relative percent of increase in yield strength for a given amount of stretching, and the rate of work hardening.

Because the yield point indicates a small amount of plastic deformation, it is a good guide for establishing the dent resistance of a metal. Consequently, the emphasis in these tests were put on the changes in yield strength, since in most formed products, such as containers, electrical appliances, and decorative trim, one that is severely dented is frequently considered as destroyed.

In Fig. 1, the yield strengths of the four alloys are plotted in curves relating the yield strength to the percent of stretch. Each alloy showed an increase with 52S acquiring the greatest strength, 3S increasing moderately, and K-150 holding a position near the midpoint between the two. Alloy 2S, of course, showed the lowest yield strength for the various percentages of stretch.

The effects which stretching had on the ultimate strengths of these forming alloys may be seen in Fig. 2. Here the alloys hold much the same relationship to each other as they did in the case of increased yield strengths after stretching. However, the ultimate strength of the material in a formed product

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is of less importance, in most cases, than is the yield strength.

In both yield and ultimate strength after stretching, alloy 52S was superior to the other alloys tested. However, 52S workhardened somewhat more rapidly than did the other three, as Fig. 3 shows. Thus, while the use of this higher strength alloy will develop better dent resistance in a finished product, it will pose fabrication problems in operations involving severe forming.

Along with its intermediate strength, alloy K-150 displayed another forming characteristic of interest in drawing and shaping operations. In these recent tests it showed the greatest percentage of increase in yield strength for a given amount of stretch. The 2S aluminum showed the next greatest percentage of increase in yield strength after stretching, while 52S showed a considerably lower percentage of increase, and alloy 3S lagged behind even further.

PROPERTIES AFTER FORMING

Crisper Pans Drawn from 0.040-in. Sheet

Alloy	Location	Thickness in.	Direction of test	Ultimate strength psi	Yield strength psi	Pct gain in yield strength
3S	Flanges	0.0426	.....	18,500	17,700	
K-150	Flanges	0.0440	.....	25,600	24,500	38
3S	Ends	0.0373	With grain	17,250	16,400	
K-150	Ends	0.0388	With grain	25,700	22,300	36
3S	Ends	0.0346	Across grain	17,950	17,700	
K-150	Ends	0.0352	Across grain	27,080	25,100	42
3S	Sides	0.0338	With grain	20,000	19,200	
K-150	Sides	0.0349	With grain	27,550	26,100	36
3S	Sides	0.0375	Across grain	17,625	16,750	
K-150	Sides	0.0385	Across grain	25,750	23,200	38

In tests of production-formed pieces made of alloys 3S and K-150, further evidence of the advantages to be gained with an intermediate strength forming alloy were noted. Test specimens were taken with and across the grain from two identical refrigerator crisper drawers made of 3S and K-150. Results are given in the accompanying table.

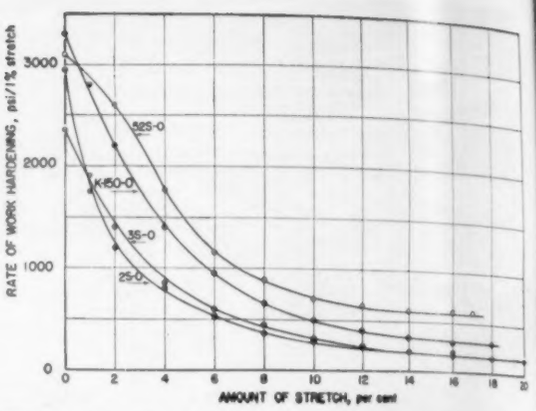

FIG. 3—Rate of work hardening of aluminum alloys during stretching. Curves plotted from tangents to curves of Fig. 1.

In this application, grain direction had little effect upon the yield strength. However, the yield strength was increased by 36 to 42 pct through the use of K-150, depending upon the location from which the specimen came. This was a substantial increase without any difference in original metal thickness. From this it can be seen that strength equal to that of 3S can be attained with thinner gages of alloy K-150 without resorting to the rapid workhardening alloy 52S.

The need for moderate workhardening rates and higher strengths to prevent tearing during forming operations, coupled with the competitive necessity to improve the appearance and service of all products, is undoubtedly the cause for the fading of alloy 2S from the forming picture. Thus there are three aluminum alloys now considered suitable for forming: 3S for use in products where strength is a minor factor of consideration, 52S for applications requiring high strength, and K-150 for the intermediate range where moderate yield strengths are necessary.

Stainless on copper halts lithium attack

Tests made at Oak Ridge National Laboratory show that spraying stainless steel on copper will protect it from the corrosive action of lithium. The work was performed for the Atomic Energy Commission by W. K. Prater and L. O. Love of Carbide & Carbon Chemicals Corp., Div. of Union Carbide Corp.

To enrich the stable isotopes of lithium by the electromagnetic process it was desirable to use the lithium metal as charge material. Initial results indicated that the corrosive action of the hot lithium metal, especially on the copper castings of the source unit, would preclude its use unless some method of protecting the castings could be found.

Current literature indicated that cast iron would afford the greatest resistance to corrosion by hot lithium metal. But because cast iron is magnetic it could not be used in this process. The non-corrosive properties of iron suggested the possibility of coating parts affected by the lithium metal with non-magnetic stainless steel. They were sand blasted and sprayed with stainless steel, coating the parts approximately 0.015 in. thick, using a metal spray gun. Of more than one hundred runs in which coated castings were used, no failures occurred due to corrosion of the castings. Castings sprayed with stainless steel have also been used with equally good results in the processing of potassium metal.

SCRAP ALLOCATION—Could Sap Buying Initiative

Steel industry organizes renewed industrial scrap drive . . . Allocations could be relied on too heavily and take the push out of local scrap procurement—*By Ted Metaxas.*

The controls-bound iron and steel crap market today is susceptible o antagonistic influences created y the shortage. One has inspired he steel industry to a whirlwind of ction to generate more scrap but he other could lead to bleeding he vigor of scrap procurement on he mill to broker level.

On the top management level, teel mills fear that unless a few illion tons of extra dormant scrap re "found" in manufacturing lants and farms, some openhearths ay give a last gasp this winter. Mills are energetically seeking to roaden and discipline the scrap alvage drive with their Steel Industry Scrap Mobilization Committee formed last week.

Two Attitudes—On the other and, scrap procurement men who t one time or another shake a fist t National Production Authority's crap allocation system when it nids their bailiwick, may find themselves eased into spurious security after NPA carloads arrive just in time. Although allocations have been proven necessary to balance a dislocated supply, reliance on them may weaken the initiative of pressing for scrap in mills' local markets.

Mills have realistically accepted a new concept of stockpiles. They see no more mountains of 30 to 60 days' supply in their backyards. If a mill had run down its supply to a precarious 2 days last month it was pleased when allocations kept the fires burning and helped build up inventory to 10 days this month.

NPA has too many applications for allocations to permit any one mill to collect a stockpile greater than its fellows. The system equalizes inventory.

Here is what could happen: When stocks are very low, the mill slave-drive its brokers, pushing them for more and more scrap. But later if it holds to that pace and drags in more and more dealer scrap when it is a shade more abundant, it can nudge itself out of the allocations scene.

Thus it may relax pressure on brokers, preferring to snub lighter, more troublesome local dealer scrap to prevent mills in other sections from getting better, heavy scrap from NPA. The mill won't refuse scrap naturally, but it may get finicky and reject a few cars. While it may be perfectly justified in doing this, brokers can take a hint.

Total Surrender—If this type of procurement paralysis is allowed to creep in, the market has surrendered utterly to the allocations crutch. It will have forgotten that allocations are not meant as a new system of distribution but as hardship help for the needy. Allocations are self-perpetuating. The more active the use, the greater the acceptance. They are also inflationary because hauling from one district to another adds up to extra freight charges.

Some dealers and brokers resent allocations because it submerges normal channels of distribution. It bars past mill friendships and creates no worthwhile new ones. Scrap cars shipped a long distance may be rejected. Dealers are not left alternatives for profitable preparation of scrap.

Perhaps inconvenienced by allocations, the scrap trade nevertheless works just as vigorously for NPA as for traditional customers. In the past few months, brokers have robbed Peter to pay Paul, juggled shipments to fill the greatest needs, and worked themselves to mental exhaustion. But they kept moving all the scrap that was available.

Now the tone of the market is a little more restful to them. Some will joke that they needed a vacation anyway. But considering that summer stockpiling will not meet fall and winter melting needs un-

Fights Its Own Scrap Battle

The steel industry is prepared to fight its own scrap battles. It has formed a Scrap Mobilization Committee, headed by senior steel company executives, who will try to arouse the nation's manufacturers and farmers to the need for dormant scrap. W. T. Hoyt, appointed executive secretary of the new committee, was director of scrap salvage in World War II and is a special consultant to National Production Authority now.

Starting off point of the renewed drive will be mobilization of some 2000 steel executives to help start a search into manufacturing plants for dormant scrap. They will assist Chambers of Commerce in local industrial scrap drives. Steel salesmen, who know to whom the steel has been going and are strategically located, will be thrown into the hunt as field men.

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less collections continue at the same pace for the rest of the year, unmindful of the cold, the market should not be at all peaceful.

Future Scrap—Long term worriers point out that after the supply of dormant scrap is exhausted new steelmaking capacity of 120 million tons must continue to be satisfied. Can it be done? Those who say "yes" stress that the yield of mill plant scrap will increase proportionately to finished steel output and the more finished steel distributed, the more prompt industrial and other scrap returned. New mills will be heavier on blast furnace capacity and more hot metal furnaces are being built to supplement the old. Furthermore, unrelieved ceiling capacity operations are unnatural for the normal market of tomorrow. There will be lulls and the steelmaking rate will fluctuate with economic conditions.

Under the stiffer competition of normalcy, mills will begin easing out older facilities.

U. S. Steel Adds Surgical Benefits; Union to Ask Others

Now that surgical benefits have been made available to U. S. Steel Corp. employees and their dependents, The United Steelworkers of America (CIO) is expected to ask other steel producers to grant similar benefits to their workers.

Under an agreement between U. S. Steel and the union, surgical insurance for 715,000 employees and their families was made available effective Aug. 1. This is in addition to hospitalization, sick and accident insurance, life insurance, and pensions.

Present employee and employer contributions—2½¢ per hr each—will continue unchanged.

The 8 million surplus in the insurance fund of U. S. Steel appears to be enough to carry the surgical benefits for the term of the agreement, according to the union. However, if the fund drops below $4 million it will be necessary for employees who elect to continue the dependent coverage to contribute 50¢ a month.

LABOR PIRATING—Tool, Die Men Cry 'Halt'!

Industry seeks to preserve small but precious staff against invasion of new defense plants . . . Held back by wage ceilings . . . Seek equal wage rates for all—*By George Elwers.*

For a long time now tool and die makers have been seeking to preserve their small but precious labor staff against assaults by the military draft and labor pirating by big-spending defense industries.

In New York City they made certain that a government committee investigating labor problems knew all about the skilled manpower shortage. In Buffalo, N. Y., where trustees of the National Tool & Die Makers' Assn. held their quarterly meeting, the subject of manpower and labor pirating in the industry made them fume.

Not particularly oppressed by price controls and materials shortages, tool and die men see all their troubles concentrated under "labor." Commercial shops in most areas are now devoting from 50 to 95 pct of their capacity to defense work. Their products start the chain reaction to new defense production—and if they lose men it took years to train, it hurts. And it hurts the defense mobilization program, too, they say.

"Every time you send your secretary through the plant, it causes a loss of 87½ man hours."

Bumping Heads—Tool and die men have been bumping their heads against Washington wage ceilings. More and more of crucial workers have left for other jobs in captive shops of new defense plants. These new plants have the logical bait—more money. They pay higher wages than the commercial shops can under the ceilings and offer a wealth of fringe benefits such as pensions, insurance, etc.

Tool and die men want standard wage ceilings slapped on various areas. New plants would be held to them, to the detriment of labor pirating. Some commercial shops want to pay as much as new competitors but are curbed by law. A few of the trustees wanted Washington to permit them to pay more money—more than the plants that had lured away their workers. They wanted to retrieve workers already lost.

Another loophole in the wage ceilings is the pledge that a promotion and more money will not be long in coming. To offset this, tool and die men want a minimum time period in which new workers stay rooted to their job classifications. They feel that this period should not be too long because it may kill genuine merit raises.

Iron Ore Shipments Increase

Shipments of iron ore from the Great Lakes District during July, 1951, grossed 13,211,844 tons as compared with 12,461,798 tons in July, 1950. During the 1951 shipping season a total of 44,544,388 tons has been shipped. This figure of over 44½ million tons represents an increase of approximately 33 pct over last year's shipments.

FREIGHT FORWARDING—Fast Growing Industry

Spurts from nowhere to half billion dollar industry in past 10 years . . . They operate on margin between carload and l.c.l. rates . . . Sell speed, service—*By Bill Packard.*

Freight forwarding is a nice business if you're smart, not inclined to ulcers and have a knack for doing things quickly. In scarcely more than a decade the freight forwarders have spurted from little-known obscurity to become almost a half billion dollar industry.

They exist by grace of the differential between carload rates and less than carload rates. They combine l.c.l. shipments of several clients to make up carloads of products headed for the same destination. Railroads don't mind this competition too much; it's no secret that they consider l.c.l. business unprofitable.

How They Operate—The freight forwarders have been able to make big strides in their volume of business by emphasizing convenience, speed and service—all at no extra cost. In fact some rates are actually lower than l.c.l. rates.

They try to offer a dependable, fast schedule using the best and most direct routes of all carriers. Their service includes door-to-door pick up and delivery. They eliminate transfers by using direct car movements from point of origin to destination.

Common Carrier—Average weight handled by the freight forwarder runs about 450 lb; average distance shipped, about 600 miles. Under 500 miles they find it hard to penetrate the truck barrier. They haul just about everything from shoe strings to nails.

They operate under the Interstate Commerce Commission. As with other carriers, all rates must be filed and approved. The last Congress granted them common carrier status for the first time.

Emergency Service — They aren't bound strictly to rail transport, though they use it most. In case of emergency they can spot urgently needed shipments, break them out of cars and fly or truck them to their destination.

Like the time Republic Carloading & Distributing Co. was shipping some motors from Milford, Conn., to Los Angeles for Bechtel Corp. who had built a new plant for Lever Bros. The motors were to operate on oil lines which were due for testing. By wiring Republic, Bechtel was able to have the motors intercepted in New York and flown the rest of the way, thus keeping the tests on schedule.

Who Uses Them—Other examples of emergency operations include stopping cars to break out and fly urgently needed parts for aircraft plants and oil well operations.

Their clients, in addition to smaller businesses who don't have enough tonnage volume to ship their own carloads, include some very large firms. Anaconda Copper, for instance, makes fabricated parts for plumbers which are shipped to big and small towns all over the country. By means of freight forwarding Anaconda is able to give little customers in remote areas the same quick service it gives big customers in industrial areas.

Growing Fast — Last year freight forwarders moved about 4.5 million tons of freight, puny by railroad standards, but a new record for them. Their dollar volume of business was $300 million. Today it's estimated at an annual rate of half a billion.

They don't think they are even close to their potential yet. As their business expands they must acquire more shipping terminal facilities. Some they own, some are leased from other carriers.

Rail Freight Hikes May Raise Prices

Increased freight rates granted to rail lines by the Interstate Commerce Commission will be reflected in retail price climbs amounting to millions of dollars, Office of Price Stabilization predicts.

Raising the rates by 9 pct on eastern roads and 6 pct on those elsewhere is expected to hit manufacturers whose ceiling prices are governed by pre-Korea prices plus allowances for cost increases. Inasmuch as the new charges will not go into effect until 15 days after the roads post notice, the Capehart amendment (to the new control law) directing computation of cost rises up to July 26 will not protect producers.

Some OPS orders were written to allow addition of greater transportation costs to specified price ceilings. Most orders, however, allow wholesalers and retailers only a percentage markup above costs.

According to the government agency, the sum the railroads will gain will be about $548 million. Rail firms expect to get about $16 million more, through "accessorial" charges.

A 6 pct maximum additional charge is allowable on iron ore, and on hard and soft coal and coke, between and within all carrier territories.

Carriers may increase rates on lignite coal by 3 pct, though there is a maximum of 10¢ per net ton or 11¢ per gross ton. New rates on phosphate rock are subject to the maximum specified for coal and coke. Potash increases are bounded by a maximum of 50¢ per net ton or 56¢ per gross ton.

UNIVERSITY OF MICHIGAN LIBRARIES

YOUNGSTOWN—Seeking to Brighten Outlook

Engineering firm paints dim view of steel future there . . . Cites high cost of assembling raw materials and inadequate supply of cooling water . . . Half of workers in iron and steel.

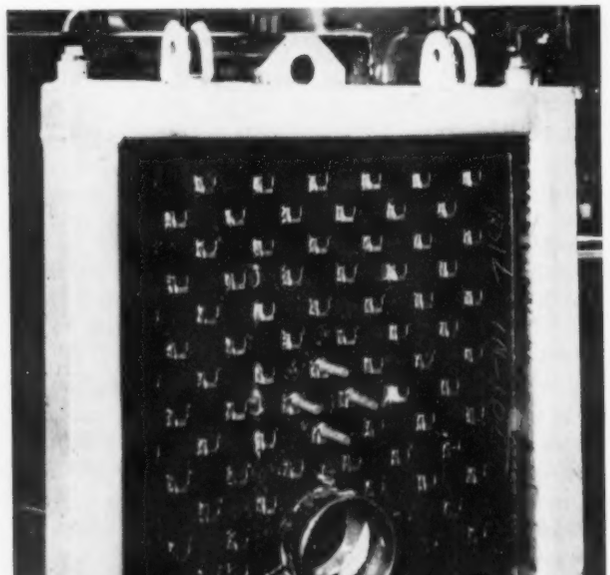
The city of Youngstown is taking a good, hard look at its shortcomings with a view to doing something about it. The picture is being "painted" by Pace Associates, Chicago engineering firm retained by the city to study Youngstown and make recommendations for improving the community's outlook.

One phase of the report touches on the steel industry, its position in the community and the industry's future in Youngstown. The report recommends a program for attracting steel-consuming and non-steel consuming manufacturers to the city.

Pace has this to say about steel in Youngstown:

Since 1916 Youngstown has slipped from second to fourth place as a steel producing center. In relation to other areas, very little expansion of ingot capacity is planned for the Youngstown district. The three principal producers in the district are expanding their facilities elsewhere.

Two principal reasons why Youngstown capacity is leveling off are the high cost of assembling raw materials and the inadequate supply of cooling water. The report cites one estimate that the cost of delivering iron ore to Youngstown for one ton of pig iron is $2.06 higher than to Cleveland and $2.83 higher than to Chicago. A steel company official is said to have estimated that it costs his company $3 to $5 more per ton to produce steel in Youngstown than it does in another of the the firm's plants. Daily river flow in Youngstown is about half the 1.2 billion gal per day required for efficient operation of furnaces and mills. As a result, water must be recirculated to the point where river water temperature has exceeded 130 degrees F. This adds to the cost producing of steel.



NEW FURNACE DOOR: Blaw-Knox Co., Pittsburgh, has developed new furnace door with special ring clips and rivets with countersunk heads for reinforcement of rammed lining. It eliminates need for welding in new studs when door is relined. Another feature is a removable peephole ring.

Studies by the Corps of Engineers and U. S. Health Service show that the proposed Mahoning-Grand River diversion projects, which would increase water flow, would mean a saving of about $1 million annually in industri water, or about 20¢ per ton of st produced by firms in the Mah ing Valley.

Besides the Mahoning-Gra River diversion, projects th would help the steel industry r duce costs are the Ohio Turnpik the proposed Riverlake Conve Belt, the St. Lawrence Seaway, t Lake Erie-Ohio River Canal, a the coal pipeline. Prospects f all except the Ohio Turnpike a uncertain, and this would be t least effective in lowering the co of producing steel.

While Youngstown district mil now produce 10.2 pct of the n tion's steel, steel fabricati plants in the district consume on 14.1 pct of the local total. Pittsburgh fabricators use 1 pct of the area's steel productio while consumption of steel in t metropolitan district of Clevela is 86.8 pct of production.

In case of slackening dema for steel, Youngstown distri mills would be vulnerable. T Youngstown district must ha additional steel-using and no steel using factories if its eco omy is to get out of its prese vulnerable position.

More than half of the Youn town district's industrial worke (51.1 pct) are employed in pr ducing iron and steel. This d pendence on primary steel greater than in any other ma steel-producing center. Ne highest is Birmingham, with 4 pct.

The report will be used as basis for developing programs f improving the economic outlo of the city.

Lukens Steel's Earnings Spurt

Lukens Steel Co. reported n earnings for the first three qua ters (ended July 7) of its 19 fiscal year of $3,388,963, compare to $742,086 for the similar peri a year ago. These earnings a equal to $10.66 a share and $2. a share respectively.

R. R. BRIDGE—Spanning the mouth of the Cuyahoga, this bridge when opened allows use of only one side. White line at left of picture indicates new bulkhead recently constructed. After improvements vessels would be able to navigate through the entire mouth of the river.

CUYAHOGA RIVER—Vital Defense Project

Mills, foundries and petroleum plants would benefit . . . Senate subcommittee grants preliminary approval . . . Industry has already spent $130 million for its expansion—*By Bill Taylor.*

The port of Cleveland's Cuyahoga River project has been called a vital arm of the defense program because it looms as a tower of strength supporting a large share of basic industry. Final approval of the $13,200,000 request would increase shipping facilities for six steel plants operated by three of the four largest steel producers in the country. (Republic, Jones & Laughlin and American Steel & Wire.)

At press time, $1 million for the project had been approved by the Senate Civil Functions Subcommittee. Now final Senate action will be sought.

Could Use Bigger Ships—The project, extending almost 6 miles up the river, would make possible the use of larger vessels now available or under construction. Low or narrow bridges would be replaced, additional river channeling would be done, and sharp river bends removed, permitting use of the larger vessels.

On completion the project would allow for shipments of 11,990,000 tons of iron ore and limestone, an amount estimated to meet demands of expanded steel mill capacities. In 1950 the net tonnage amounted to 7,611,192 according to U. S. Government records. Three petroleum plants would also be able to ship an additional 17 million gals of petroleum products.

The new Ford foundry, when completed and ready for capacity production, will require an estimated 340,000 tons of molders, and core sand annually. Other industrial plants and facilities will benefit by the program as well.

Big Tonnages Needed—Producing more than 2½ million tons of steel annually, steel plants in the area will need, in addition to iron ore and limestone, considerable tonnages of coke. Because the navigation season is shortened by ice during the winter months these raw materials must be stockpiled during the summer.

To date steel companies have spent $130 million in expanding their plants and harbor facilities. The railroads have aided in the construction and replacement of bridges. All told, the cost of new facilities and harbor improvements paid for by industry and non-federal agencies would run to $143 million, 11 times the amount now sought from the government.

Can Begin at Once—Plans are now available so that work can begin immediately when the Senate appropriation is approved. Bridges to be replaced and the channeling to be done are scheduled in order of their hindrance to navigation. Most important of these is a railroad bridge spanning the mouth of the Cuyahoga.

It permits the use of only half the width of the river mouth.

Begin Tests on Atom Furnace; English Study Atomic Power Plant

Tests of the Atomic Energy Commission's breeder reactor, an atomic furnace designed to produce more fissionable material than it consumes, are about to begin at Arco, Ida.

AEC expects its reactor experiments, scheduled to last several weeks, to prove whether the unit actually will turn out quantities of fissionable matter and electric power simultaneously. If the reactor performs as desired, it will increase the potency of the national supply of "working atoms" 140 times.

At Harwell, Eng., scientists and personnel of the Supply Ministry are studying plans for building an atomic power plant, but official predictions are that it may take 15 years to get such a facility into operation. One British spokesman branded as "premature" stories that construction was ready to begin.

It has been estimated in Britain that a plant of this type would cost three times as much as the customary coal-burning plant supplying power for a medium-sized town. However, the savings in fuel over a 30-year period of operation, the same sources say, might reach $33,600,000.

UNIVERSITY OF MICHIGAN LIBRARIES

INDUSTRIAL BRIEFS

Incorporated—As a result of expanded operations of the Pacific Div. plants of Parker Appliance Co., Los Angeles, the division has been incorporated as the PARKER AIRCRAFT CO., a wholly-owned subsidiary of the parent company.

Doing Business Elsewhere — DOW CORNING CORP. have moved their New York offices to 600 Fifth Ave.

Detroit Office—PEKAY MACHINE & ENGINEERING CO., manufacturers of foundry sand handling and conditioning equipment and elevator buckets, have opened a sales service and engineering office at 13720 Puritan Ave., Detroit.

Jet Facilities—A contract for the expansion of production and research facilities at REPUBLIC AVIATION CORP's jet airplane factory in Farmingdale, L. I., has been awarded John W. Harris Associates, Inc. Estimated cost of the building program is $1.5 million.

Smooth Landing—An automatic elevator which lands so smoothly that passengers hardly know the elevator has stopped will be installed in the power house of U. S. STEEL CO.'s Fairless Works, Morrisville, Pa. The smooth landing is made possible by Synchro Glide Landing, the system recently developed by WESTINGHOUSE ELECTRIC CORP.

Patent Issued—AMERICAN CLADMETALS CO., Carnegie, Pa., states that a patent entitled "Procedure For Making Composite Strip Metal" was recently issued to them. The invention provides for an improved method of producing cladmetals.

Exclusive License—Northrop Aircraft, Inc., has awarded an exclusive license to TURCO PRODUCTS, INC., Los Angeles, for manufacture and marketing of all materials used in the Dy-Chek dye penetrant inspection process.

Output Up—Steel ingot production of the STEEL CO. OF CANADA, LTD., Hamilton, Ontario, in the second quarter of 1951 was greater than in any previous quarter. All plants operated at capacity and sales both in tonnage and value compared favorably with those of any similar period.

Conservation Program—Ohio will not issue new metal license plates to operators of motor vehicles during 1952. A contract has been made with PALM BROS. DECALCOMANIA CO., Cincinnati, to produce licenses in the form of decalcomanias, thus conserving scarce steel.

The Years Add Up—PHILADELPHIA QUARTZ CO., Philadelphia, is celebrating 120 years of continuous business. During the years the company has expanded its facilities throughout the East, Mid-West, West and Canada.

Extra Production—AMERICAN STEEL & WIRE CO. plants in Joliet, Ill., and Duluth, Minn., have increased their working hours over and above normal schedules to turn out vital steel and wire products needed in the rehabilitation of the Missouri Valley flood-stricken areas.

Revival—U. S. RUBBER CO. has awarded a contract to the Chemical Plants Div., Blaw-Knox Construction Co., for construction services in reactivating the Kankakee Ordnance Works at Joliet, Ill.

DOWN TO SIZE: Giant size hex nuts for a 250-ton hydraulic press are cut to shape by the oxy-acetylene process at General-America Transportation Co., Sharon, Pa. The Oxweld C-37-R Cutting Blowpipe slices through 24 in. of low carbon steel billet.

Plans to Move—To adequately ser a growing number of users of p cision investment castings, HITCH NER MFG. CO., INC., is movi about the end of August from th plant in Manchester, to a new a larger factory in Milford, N. H.

Transfer Completed—Whitney Ch Co., Hartford, Conn., has comple the transferal of their Woodruff K Div., to STANDARD STEEL SPE IALTY CO. This includes the go will, manufacturing equipment a stock inventory of this division.

Up To Date—A $500,000 moderniz tion of its Oil City, Pa., plant is pla ned by WORTHINGTON PUMP MACHINERY CORP. Plans inclu re-equipping the present foundry a establishing a new electric pow supply.

Building New Plant—Construction a new $2.5 million plant is underw at FAIRFIELD MFG. CO., Lafayet Ind. The building is expected to ready for occupancy before the end 1951 and will provide 181,000 sq ft floor space to house office, enginee ing and maufacturing departments.

John Fritz Medal — Ervin Geor Bailey, vice-president of BABCOC & WILCOX CO., New York, was s lected to receive the 1952 John Fri Medal and Certificate "for outstandi engineering achievements in the fie of combustion and distinguished se vice to his fellows in advancing th engineering profession."

Certified — The National Producti Authority has granted WHITNE CHAIN CO., Hartford, Conn., a Ce tificate of Necessity to expand i manufacturing capacity. The Certi cate will be applied against erecti and equipping a new plant in Lon view, Tex.

New Installation—B. F. GOODRIC CHEMICAL CO. will construct a ne plant in Calvert City, Ky. The chem cal plant, on a tract comprising abo 175 acres, will on completion repr sent an investment of more than million.

Corporation Formed—Albert Curr Jr., used and rebuilt equipment deale of Pittsburgh, has incorporated a ALBERT CURRY, INC. Albert Curr was elected president and treasure and Thomas Hudson was named vic president and secretary.

AX WRITEOFFS—Wilson Orders 60-Day Rest

Two-month suspension effective Aug. 18 . . . Defense officials want to study program in the calm . . . Structural steel shortage will limit any additional construction programs.

Defense Mobilizer Charles Wilson has ordered a 60-day moratorium on approval of more fast tax writeoffs for defense facilities. The order, effective Aug. 18, was contained in a letter from Mr. Wilson to Defense Production Administrator Manly Fleischman.

Reason for the order is to give defense officials a chance to study the program. So far more than $8 billion of defense production facilities have been approved for rapid amortization. This covers about 70 pct of the cost of facilities certified as necessary for the defense effort.

Mr. Wilson praised the program as being of great value in speeding expansion and production for the defense effort. But he declared, "As we move closer to the realization of our expansion goals within specific categories we should tighten our standards and adhere to specific rules wherever possible. This should result in generally lower percentages of amortization, although there will be specific instances which will not fit this pattern."

To Go Through—Effective date of the moratorium will permit approval of applications for certificates of necessity being processed this week. NPA had been announcing a long list of approvals each week. It is estimated that $12 billion in applications still await processing.

Mr. Wilson indicated that the shortage of structural steel and other construction materials made it doubtful that much additional construction, beyond that already approved, could be undertaken for several months anyway.

This phase of the program to encourage defense production had been under congressional fire from time to time. However, it is believed Mr. Wilson's action resulted more from the speed with which certificates of necessity have been approved and the nearness to expansion goals in some lines than from criticism.

It seems clear that certificates of necessity will be granted more sparingly in the future. On Friday of last week a new Presidential policy of industrial dispersal was announced. This was interpreted to mean that any company wishing approval of fast tax writeoffs would have to expand in line with the government's dispersal policy.

New $8 Million Pier for Iron Ore to Be Built in Philadelphia

Pennsylvania R.R. expects increase in ore flow from foreign mines.

Ships from ports in South America and Africa will in 1953 be hauling cargoes of iron ore to an $8 million unloading pier on the Delaware River, Philadelphia, for shipment to Pittsburgh steel mills. (U. S. Steel's Fairless Works will have its own unloaders.) The pier will have a rated capacity of 2400 tons an hour.

Blueprints have left provision for a quick doubling of the unloading rate from two ships at once to four ships if needed. Pennsy president Walter S. Franklin foresaw a steady increase in iron ore imports from new mines in Venezuela, Brazil, Chile, Liberia, and Labrador-Quebec. The pier will be located North of the railroad's coal dumping pier at Greenwich Point.

Amid festivities last May the Baltimore & Ohio Railroad formally opened its $5 million ore pier in Baltimore, receiving a boatload of ore from Chile for Bethlehem Steel Co. (THE IRON AGE, May 17, 1951, p. 109.)

Loaded Two Ways—Location of the Pennsy pier in the backyard of the coal dumper was a natural for efficiency and cost cutting. Ordinarily hopper cars return empty from the coal dumper. With the ore pier nearby though they will unload and then be switched to the ore pier. Instead of returning as empties they are filled to the brim with ore.

The concrete pier structure stretching 850 ft into the Delaware (to be built at a cost of $1,800,000) will be equipped with two electric unloading cranes worth $1,700,000. Buckets will drop ore onto moving belts 54 in. wide, extending 1600 ft from pier to shore to a 500-ton capacity elevated hopper.

HUGE TASK: A king-size tank is swung into position on the hull of the largest self-unloading vessel to go on Great Lakes service. It is being built for U. S. Steel's Bradley Transportation Co. at Manitowic, Wisconsin.

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CMP—Seen as Inevitable by DPA till 1953

Manufacturers who have not filed requirements with NPA will find going tough to get steel . . . DPA thinks a small amount may be on open market . . .Quarter's allocations top output.

Governmental control over the distribution of steel, copper, and aluminum through CMP allocations is now regarded as inevitable until far into 1953. At least, this is the official line of thought with the Defense Production Administration as it switches from an open-end to a closed CMP. The transition will take place during the last quarter of 1951.

Manufacturers have previously been advised to file Controlled Materials Requirements with NPA. Those who have not done so by Aug. 15 will find it tough sledding to get steel, although DPA says there will still be a small amount on the open market.

Tentative fourth-quarter steel allocations of 24 million tons have already been made—far above probable output. But DPA believes when allocation checks are drawn, the supply will balance.

A rough breakdown, in tons, follows: Petroleum, 1,807,000; Defense Dept., 1,946,000; railroad, 1,872,000; containers, 1,615,000; maintenance, repair, and operation, 1,312,000; general, 1,068,000; building, 1,016,000; automobiles, 3,464,000; other consumer durables, 867,000; reserves, 1,171,000; and all other, 7,921,000 tons.

Works "Well"—DPA chief Fleischmann denies that CMP has over-issued allocations. He says manufacturers have placed duplicate orders, have failed to adjust or cancel promptly, and have placed out-size orders in "technical violation." Nevertheless, he says CMP has been working "very well."

Current belief that CMP controls cannot be relaxed before mid-1953 is based on the fact that "essential" requirements for controlled materials are now 250 pct of the supply of structural steel, 147 pct for carbon steel, 145 pct for aluminum, and up to 181 pct for copper. There just isn't enough for everybody, CMP says.

But deliveries for defense purposes are expected to hit their peak in about 18 months. At the same time, new steel and aluminum production capacity will be nearing completion and demand for capital equipment will be tapering off.

Ergo, DPA figures that there then should follow an era of plenty for all users of steel and aluminum with controls being relaxed. It is admitted that the copper picture is something else again.

"Clearly," Mr. Fleischmann says, "between now and 1953 our requirements (for controlled materials) will be greater than supply but our shortages will gradually disappear. For the time being we must continue to divert materials and facilities."

Hence, DPA is working on a 2-year program. But it is not taking into consideration that the Defense Production Act comes up again next year for extension and revision. Congress could refuse to renew the Act.

OPS Creates Small Business Committee to Help Little Firms

Senior officials representing each major operating department of the Office of Price Stabilization will constitute a Small Business Affairs Advisory Committee for the agency. Committeemen have not yet been selected, nor has OPS announced who will fill the newly-created post of Asst. to Director for small business.

One problem for the committee will be recommendation where possible of simpler pricing methods for those firms not equipped to undertake quantities of paper work.

OPS Chief DiSalle has ordered that all industry advisory committees continue to have a "fair representation" of small business. He wants a senior employee in every OPS regional and district office to have specific responsibility for handling small business matters.

Within the Washington office the new committee is expected to:

(1) Advise the director on recommendations coming from select committees on small business of the House and Senate and from other Federal sources.

(2) Serve as a focal point for intra-agency discussions and exchange of information on small business activities.

(3) Recommend ways to eliminate delays in administrative action which may be especially costly to small business.

(4) Consider those problems referred to it by the director of the small business assistant.

Lawyer's Field Day

Office of Price Stabilization is preparing court cases against 50 large companies, says Edward Morgan, the agency's enforcement director. Morgan described the cases as "Beauts."

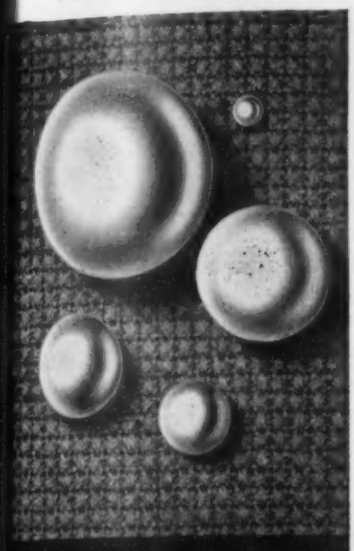
He said they will entail millions of dollars in penalties and will include charges which "cover the waterfront" of price controls. He expects prosecutions involving metals, machinery, automobiles, household equipment, textiles, and meat.

Lift Price Lids on Ores

A decision by Office of Price Stabilization to take price controls off a number of critical and strategic ores and materials is being viewed as a method of insuring their continued availability.

Those items exempted by OPS in Amendment 4 to General Overriding Regulation 9, include raw asbestos, beryl and chrome ores, cobalt ores and metal, columbite

a metal ball PROBLEM?



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Controls Digest

Continued

tantalite ores, natural graphite, kyalite and related ores, manganese ores, and acid-grade fluorspar. Sales of domestic mercury were placed in a non-controlled status, but sales of imported mercury will stay under CPR 31.

Industry Controls This Week:

OPS

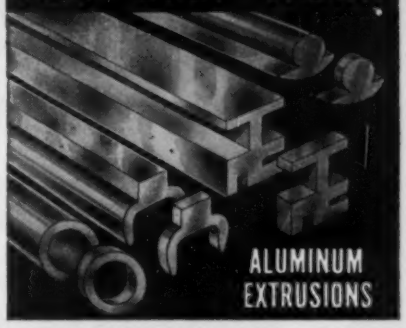
Amdt. 4, GOR 9, Exempts some ores, materials from price controls. Raw asbestos, beryl and chrome ores, cobalt ores and metal, columbite-tantalite ores, natural graphite, kyalite, manganese ores, acid-grade fluorspar, and domestic mercury.

DEFENSE CONTRACTS

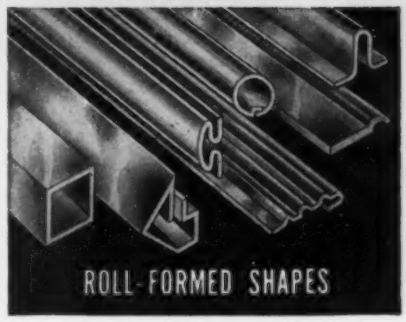
Week of Aug. 13, 1951

Grinders—Chicago Pneumatic Tool Co., Philadelphia
Wrenches—Duro Metal Products Co., Chicago
Threading sets—Greenfield Tap & Die Corp., Greenfield, Mass.
Wrenches—Chicago Pneumatic Tool Co., Philadelphia
Blocks—Schultes Level, Inc., Detroit
Trucks—West Bend Equipment Corp., West Bend, Wis.
Hammers—Woodings-Verona Tool Works, Verona, Pa.
Planer—Rockford Machine Tool Co., Rockford, Ill.
Tractors—Crescent Truck Co., Lebanon, Pa.
Puller Bearings—National Machine & Tool Co., Jackson, Mich.
Wrenches—Stevens Walden, Inc., Worcester, Mass.
Drills—Independent Pneumatic Tool Co., Aurora, Ill.
Shovels—True Temper Corp., Cleveland
Maintenance parts—Airesearch Mfg. Co., Los Angeles
Heaters—Coates Electric Mfg. Co., Seattle
Cable—Anaconda Wire & Cable Co., Hastings-on-Hudson, N. Y.
Zinc Slabs—Anaconda Sales Co., New York
Nuts—Bethlehem Steel Co., Bethlehem, Pa.
Dogs—Torrey Roller Bushing Works, Bath, Me.
Card holders—Sam C. Earley Corp., Toledo
Nuts—Republic Steel Corp., Cleveland
Maintenance parts—Goodyear Aircraft Corp., Akron, Ohio
Nickel cathodes—International Nickel Co., Ind., New York
Tool equipment—W. C. Fleck & Bros., Jenkintown, Pa.
Transformers—Sola Electric Co., Chicago
Tool equipment—Century Tool Co., Philadelphia
Flywheel—Briggs & Stratton Corp., Milwaukee
Switches—Herbach & Rademan, Philadelphia
Relays—Allied Control Co., Inc., New York
Wire—American Insulated Wire Corp., Pawtucket, R. I.
Wire—Diamond Wire & Cable Co., Sycamore, Ill.
Fastener—Stanley Hardware Co., Philadelphia
Transmitter—Western Electric Co., New York
Spare parts—Radio Corp. of America, Camden, N. J.
Radio receiver—Collins Radio Co., Cedar Rapids, Iowa
Repeater Coil assembly—Cook Electric Co., Chicago
Mounting plate—Malkin-Illion, Irivington, N. J.
Tube, electron—Radio Corp. of America, Harrison, N. J.
Cable—Graybar Electric Co., Philadelphia
Earth borer—Highway Trailer Co., Edgerton, Wis.
Power unit—Alliance Mfg. Co., Alliance, Ohio
Generator sets—John R. Hollingsworth, Clifton Heights, Pa.
Generator—Master Vibrator Co., Dayton, Ohio

PROMPT DELIVERY! FOR "D. O." WORK



ALUMINUM EXTRUSIONS



ROLL-FORMED SHAPES

Let Werner light metal shapes help you meet "D.O." deadlines.

You can get prompt delivery of "custom" shapes in extruded aluminum, as well as roll-formed aluminum, stainless steel, brass, zinc and copper. Shapes are manufactured to close tolerances, to your exact specifications. Quality is assured by Werner's extensive manufacturing and engineering experience, plus full production facilities, including tool-and-die-making equipment.

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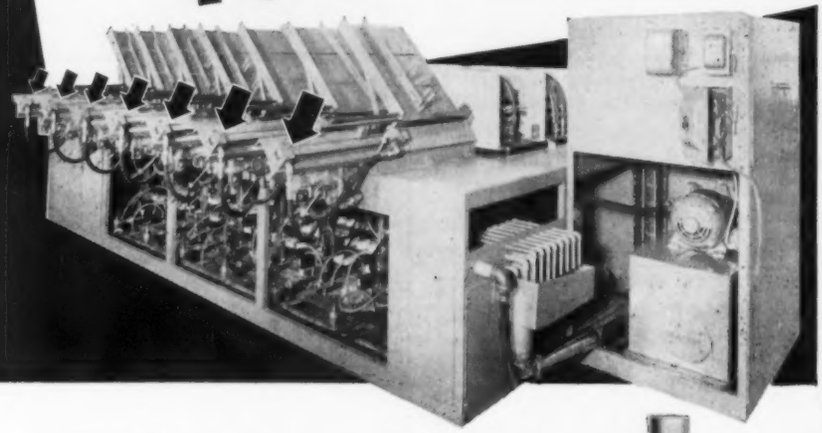
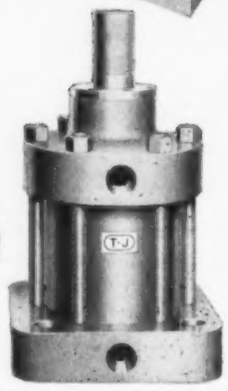
Feeds Automatically WITH T-J CYLINDERS



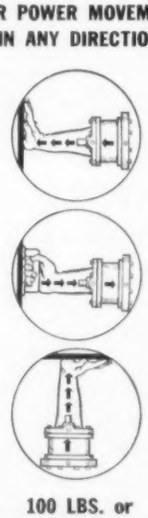


T-J Hydraulic Cylinders furnish efficient, automatic "push power" for feeding devices in this new Ajax-Northrup induction forge heating equipment.

This unit—manufactured by Ajax Electrothermic Corp., Trenton, N. J.—automatically heats steel forging stock in sizes ranging from 1 to 4 inches (rounds or squares) at 2250°F. at rate of 7500 to 8500 lbs. per hour. Has space for 8 heating stations . . . each with *hydraulically operated billet feeding devices employing T-J Cylinders.* These cylinders also eject heated bars automatically. Induction heating with this equipment results in uniformity of successive billets fed to the forge—thus controlling quality of finished forgings and reducing rejects.

Do you have a tough job in power movement—pushing, pulling or lifting? Let T-J help you *simplify machines, save labor* and *cut costs* by using T-J Air or Hydraulic Cylinders! Many standard sizes and styles . . . cushioned or non-cushioned . . . 100 lb. or 50,000 lb. Precision-built, long life. Write for more information. The Tomkins-Johnson Co., Jackson, Mich.

FOR POWER MOVEMENT IN ANY DIRECTION



100 LBS. or 50,000 LBS.

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T-J

Machine Tool Production Doubled at Warner & Swazey

Since the Korean war started the Warner & Swazey Co. of Cleveland has more than doubled its machine tool production. It is estimated the company produced two and a half times as many machine tools in June, 1951, than it did during the same month 1950.

Even in the face of a tight labor market, the firm doubled its factory force to meet the demand for additional machine tools by defense plants. Although production has been doubled, backlog orders at the plant are equivalent to 22-months' production at the current rate.

Commenting on National Production Authority Chairman Wilson's recent directive that priority assistance be given machine tool builders, Charles E. Stilwell, Warner & Swazey president, said, "If these programs are carried forward, and we have no doubt they will be, they should greatly assist the industry; and with greater co-operation with the Defense Departments . . . we have no doubt that machine tool builders will perform the same miraculous job that they did in World War II."

Third Less Steel for Oil

Allocation of 325,000 tons of steel casing, tubing, and drill pipe has been made to oil and gas operators for use during the fourth quarter.

This is less than one-third of the quantity asked by the operators who requested more than 1.1 million tons. But Petroleum Administration for Defense had only a tentative set-aside of 1.8 million tons of steel to be doled out to all claimants in the oil and gas field.

PAD reports completion of some 22,000 oil and gas wells through July of this year, slightly more than for the same period last year.

Continued

Need Survey to Nip Complaints, Used Steel Drum Group Warns OPS

Complaints from dealers in used steel drums will continue, the Office of Price Stabilization is warned, unless the government makes a survey to determine whether an upward adjustment should be made in the industry's ceiling price regulation (CPR 36).

Members of the Used Steel Drum Industry Advisory Committee, who issued the warning in Washington, feel that ceilings established by CPR 36 are generally fair, but that a greater number of drum sizes should be included. At present, only drums of 30 to 58-gallon capacity are covered.

Committeemen suggest that the regulation should apply to 15-gallon drums, but object to inclusion of 5-gallon pails and 100-lb grease drums. These latter, they say, usually require special handling under a variety of conditions and might better be controlled by the General Ceiling Price Regulation.

Distribute Tungsten, Molybdenum

Action will be taken to implement a recommendation by the tungsten-molybdenum committee of the International Materials Conference for distribution of these two scarce materials in the current quarter.

The 11 member countries represented on the committee have agreed that consumers of tungsten and molybdenum ores and concentrates should continue to export a portion of their consumption as primary products. The proportion to be exported, the recommendation says, "should be the same as that to which the country's total civilian requirements are being met in the plan of distribution for the third calendar quarter. . . ."

IMC has defined this policy as a stopgap measure applying to the third quarter alone. The committee intends to study a plan for distribution in subsequent periods.

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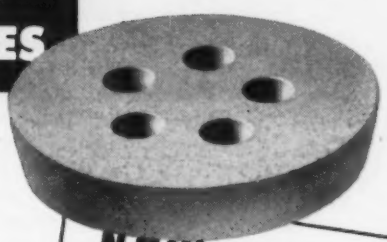
• Here is a precision made, kiln fired ceramic strainer core that is tough. These easy-to-handle strainer cores are gas free and made to withstand all normal foundry pouring temperatures.

ALSIMAG® Ceramic STRAINER CORES



AlSiMag Strainer Cores are made in many shapes and sizes. They fit in the gate of your mold and strain the incoming metal. Foundries using them report substantial reduction in rejects and improvement in smoothness and uniformity of castings. They are easier to handle—speed production. Store practically any place.

FREE SAMPLES of sizes in stock will be sent free on request. Samples specially made to your own specifications at moderate cost. Try them in your own foundry and see for yourself how AlSiMag Strainer Cores will save you money.

NEW PRICES

Demand for AlSiMag Strainer Cores far exceeded our highest estimates. New high production machinery now permits us to meet any reasonable delivery date.

WRITE for new quotations specifying size, type and quantity desired. Each item has been refigured on basis of improved production methods.

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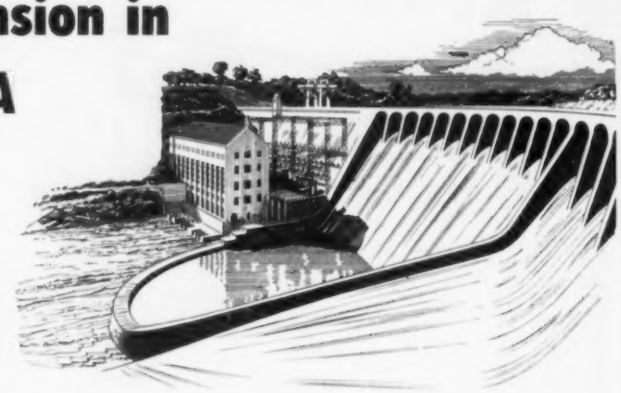
Why ALABAMA POWER COMPANY is Spending $100,000,000 for Expansion in ALABAMA



Thomas W. Martin, Chairman of the Board of Alabama Power Company, recently announced a record-breaking three-year program of expansion of $100,000,000.

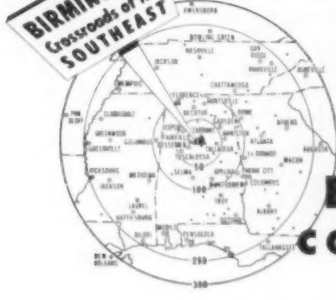
In a statement announcing the decision of the Company to spend this unprecedented sum for new construction, Chairman Martin said:

"No region in America has matched the Southeast's dynamic progress in the past two decades. The Southeast has outgained all sections of the nation in percentage of increase in per capita earnings and is now being generally acclaimed as the region of tomorrow's greatest opportunities for growth.

"Birmingham is the central city of the Southeastern States. It has outstanding manufacturing and distributing advantages for companies that are decentralizing, manufacturers that are broadening production, and firms which wish to put sales offices in the center of the growing Southeast consumer market. Among these are abundant raw materials and labor, a web of transportation facilities, low-cost fuels and power, and a most reasonable tax rate.

"Birmingham and Alabama have experienced their greatest industrial development in the postwar period. Studies made by our Company forecast continuation and acceleration of this progress in the period ahead. This is why we estimate the expenditure of more than $100,000,000 over a three-year period for expansion of our Company's facilities in Alabama."

* * * * * * * *



The Committee of 100 or any of the undersigned members of the Executive Committee will welcome the opportunity to give you confidential and specific data regarding the advantages of the Birmingham district for your plant, office or warehouse.

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Postpone Gas Limitation Order; States Demand Authority

More time will elapse before issuance of a Petroleum Administration for Defense order limiting distribution of natural gas in large sections of the nation.

It had been predicted unofficially that the PAD directive, which the agency says is designed to prevent excessive quantities of steel from being used for pipeline construction, might be issued before Aug. 15. However, after a session with Public-Service Commission officials from 15 states that will be primarily affected if the order is issued, C. P. Rather, head of PAD's gas division, announced a postponement.

Mr. Rather said some of the state commissioners indicated a willingness to apply the proposed order, while others insisted they would handle gas distribution problems in their own states. This is within the province of state personnel.

PAD asserts it still has the responsibility for preventing gas shortages at any place in the country, even if every state intends to certify to President Truman that limitations are being administered locally. For that reason, the order may go out with only minor amendments suggested by state commissioners now studying the directive.

GSA Can Up the Ante On Pool Orders for Tools if Trouble Ends

General Services Administration can now place an additional $1 billion worth of machine tool "pool" orders—providing that production bottlenecks, including material shortages and pricing problems, can be ironed out.

Officials told THE IRON AGE this week that under NPA certification the Budget Bureau has allocated another $200 million for the purpose. This brings to $340 million the total that GSA now has available for pool orders.

The agency previously has been

Continued

working on a basis of 90 pct liability—that is, it must have on hand cash to that percentage of total orders. This has been changed, because of the great industrial demand, to "a prudent reserve basis" of 30 pct liability.

GSA is currently negotiating some 22 proposed contracts involving 4764 machine tools at an estimated $92 million. It is admitted, however, that the outcome of some of these negotiations depends upon expected Office of Price Stabilization action.

Pool orders accepted so far amount to $52 million, involving 7 separate contracts and 3692 tools, GSA said.

Meanwhile, manufacturers have turned down five contracts affecting 1323 tools and amounting to 16 million. Major reasons were unsatisfactory prices and inability to work them into production schedules.

More Help for Plane Output

Recommendations on steps to take in breaking the bottleneck in airplane production will be made to Defense Production Administration by John G. Wood, of Bloomfield Hills, Mich.

Wood, who spent 43 years in the automotive engineering business, has been named consultant to DPA's aircraft production board. In that capacity, he will work with Harold R. Boyer, the agency's Administrator for aircraft production.

Basic Metals Quotas for Autos

Automobile manufacturers have been allocated 3,464,000 tons of steel, 92,000,000 lb of aluminum, and 147,000,000 lb of copper for fourth-quarter civilian production only.

First and second quarter 1952 allotments will be mailed by NPA on or before the middle of August. They are expected to approximate the fourth quarter allotments which are figured to permit quarterly production of 1,100,000 passenger cars.

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Itabira Iron Ore for Open Hearth Furnaces

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Fe (Guaranteed minimum)	68.5
P (Guaranteed maximum)	.045
Moisture (Guaranteed maximum)	1.0

Recent shipments have averaged about .80% moisture, 69.01% Fe, .028% P and .27% S_1O_2. Sizes are half inch to eight inches.

Steel companies now using ITABIRA IRON ORE as charge and feed ore report substantial savings in operating costs. These result principally from absence of impurities, low moisture, high iron content and hard structure.

Substantial savings in steel scrap have been achieved in many open hearth operations by using higher percentages of Itabira Ore in the charge.

Inquiries should be addressed to the Vale do Rio Doce Agency, Room 1611, 63 Wall Street, New York 5, New York.

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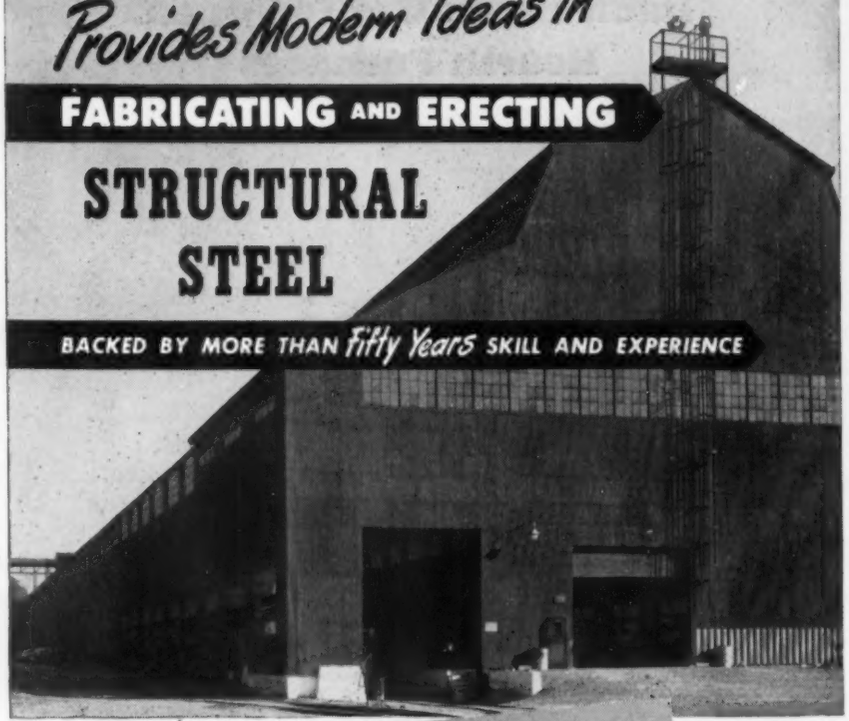

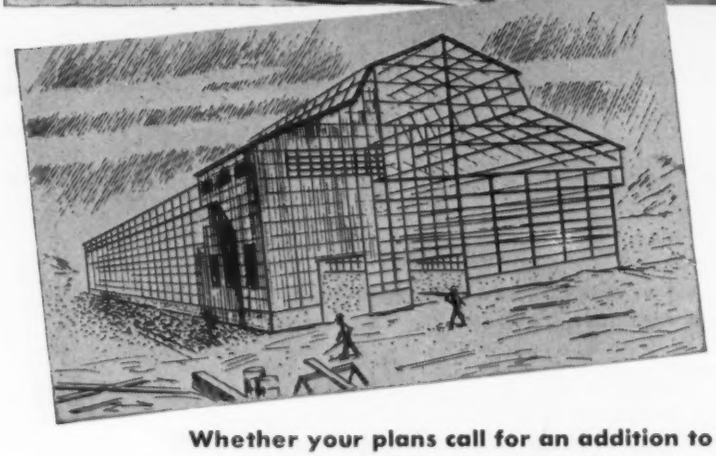

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Latest DPA certificates listed by company, use, amount applied for, amount eligible, and pct approved.

C. O. Jellif Mfg. Corp., Southport, Conn., wire, $194,000, $194,000, 60.

Heppenstall Co., Bridgeport, steel forgings, $74,532, $74,532, 75.

Torrington Co., Torrington, Conn., anti-friction bearings, $625,000, $625,000, 75.

Caval Tool & Machine Co., Newington, Conn., aircraft parts, $56,423, $56,423, 80.

Threadwell Tap & Die Co., Greenfield, Mass., taps, dies, $264,481, $212,709, 85.

Raytheon Mfg. Co., Waltham, Mass., research & development, $30,054, $26,264, 85.

Morse Twist Drill & Machine Co., New Bedford, Mass., drills & reamers, $248,504, $248,504, 75.

Moore Drop Forging Co., Springfield, Mass., forgings for lock nut, $40,000, $40,000, 85.

Simonds Saw & Steel Co., Lockport, N. Y., sheet steels, $1,862,188, $1,862,188, 60.

Burke Steel Co. Inc., Rochester, N. Y., forgings-steel, $253,779, $231,619, 75.

Radio Corp. of America, Harrison, N. J., tubes, $1,365,000, $1,334,848, 75.

Radio Corp. of America Harrison, N. J., tubes, $1,544,634, $1,544,634, 75.

Buerk Tool Works, Buffalo, N. Y., aircraft assemblies $17,517, $17,517, 90.

Gleason Works, Rochester, N. Y., bevel gears, $177,728, $177,728, 75.

Airborne Instruments Laboratory, Inc., Mineola, N. Y., antennas, $117,810, $117,810, 80.

Airborne Instruments Laboratory, Inc., Hempstead, N. Y., antennas, $665,000, $600,000, 80.

Airborne Instruments Laboratory, Inc., Hempstead, N. Y., antennas, $165,055, $138,380, 80.

Potter Instrument Co., Inc., Great Neck, L. I., N. Y., electronic instrs.-measuring, $18,014, $17,014, 85.

Okonite-Callendar Cable Co., Inc., Paterson, New Jersey, power cable, $94,390, $94,390, 75.

DeLaval Steam Turbine Co., Trenton, New Jersey, steam turbines & pumps, $152,936, $152,936, 85.

Hoeganaes Sponge Iron Corp., Riverton, New Jersey, iron powder, $4,118,600, $3,868,600, 60.

American Hard Rubber Co., Butler, New Jersey separators, $763,855, $763,855, 50.

Hewitt-Robins, Inc., Buffalo, N. Y., wire hose, $16,298 $16,298, 75.

Reading Batteries, Inc., Reading, Pa., storage batteries, $60,809, $35,809, 60.

Staiman Brothers Williamsport, Pa., scrap iron, $9,500, $9,500, 75.

Standard Steel Spring Co., New Castle, Pa., flat leaf springs, $78,238, $78,238, 80.

Ingalls Iron Works Co., Verona, Pa., structural steel, $194,206, $170,496, 60.

Landis Tool Co., Waynesboro, Pa., grinding machines, $1,543,667, $1,543,667, 75.

Joy Mfg. Co., Franklin, Pa., mining machinery $418,136, $264,136, 50.

Lucerne Coke Co., Indiana, Pa., coke, $2,200,000, $2,200,000, 75.

Air Products, Inc., Emmaus, Pennsylvania, oxygen generators, $174,784, $144,094, 80.

Allied Chemical & Dye Corp., General Chemical Div., North Claymont, Delaware, sulfuric acid, $3,552,000, $3,552,000, 80.

Bethlehem Steel Co., Williamsport, Pa., wire rope, $370,000, $370,000, 60.

Macon, Dublin & Savannah RR Co., Portsmouth, Va. (Home Office), transportation-rail, $98,989, $21,456, 65.

Standard Lime & Stone Co., Kimballton, Va., limestone, $48,599, $33,921, 75.

Brenco, Inc., Petersburg, Va., bearings, $171,020, $94,963, 60.

Buffalo, Rochester and Pittsburgh railway Co., Baltimore, Md. (Home Off.), railroad maintenance facilities, $208,090, $208,090, 65.

Atlanta & West Point RR Co., Atlanta, Ga. (Home Office), transportation-rail, $510,750, $510,750, 80.

Western RR of Alabama, Atlanta, Ga. (Home Office), railroad freight cars, $572,000, $572,000, 80.

Alcote, Inc., Detroit, surface treatment of
minum, $211,750, $201,250, 60.
Riebold, Inc., Canton Ohio, castings for
ks, $95,357, $95,357, 75.
low Chemical Co., Midland, Mich., mag-
Term die casting, $27,421, $227,421, 75.
Tver, Wickwire & Co., Jackson, Mich., tank
k pins, bushings, $126,367, $123,129, 80.
Universal Products Co., Dearborn, Mich.,
nance, $372,489, $372,489, 80.
Diamond Screw Products Co., Wyandotte,
ch., steel & brass nuts, $30,571, $30,571, 75.
Falls Industries, Inc., Solon, Ohio, heat ex-
gers, valves), $46,647, $45,147, 80.
Pipe Machinery Co. Cleveland, Ohio, gages,
,450, $50,450, 90.
National Acme Co., Cleveland, machine tools,
3,073, $299,158, 85.
White Motor Co., Cleveland, tank assem-
s, $413,170, $413,170, 85.
Eaton Mfg. Co., Marshall, Mich., rotor
ps, $82,156, $882,156, 80.
Buhr Machine Tool Co., Ann Arbor, Mich.,
lling machine, $194,493, $186,493, 80.
Canton Drop Forging & Mfg. Co., Canton,
io, ordnance, $538,822, $538,822, 75.
Colonial Broach Co., Warren twp., Detroit,
aching machines, $195,630, $185,130, 80.
General Motors Corp., Moraine City, Ohio,
rts for propellor, $4,577,309, $4,108,230, 75.
General Motors Corp., Moraine City, Ohio,
raft, $8,952,958, $5,713,823, 75.
General Motors Corp., Grand Blanc, Mich.,
ls, $11,979,663, $1,578,218, 75.
Union Carbide & Carbon Corp., Marietta,
io, ferro-alloys & calcium carbide, $78,-
,000, $78,538,800, 65.
Alliance Structural Co., Alliance, Ohio,
nes, $307,620, $307,620, 75.
Alliance Machine Co., Alliance, Ohio, cranes,
9,103, $539,103, 75.
Great Lakes Steel Corp., River Rouge, Mich.,
ter (iron ore), $1,312,400, $637,585, 75.
Hydraulic Press Mfg. Co., Mount Gilead,
io, hydraulic presses, $487,500, $487,500, 75.
Toledo Scale Co., Toledo, Ohio, tank control
r, $607,800, $605,400, 80.
Transamerican Freight Lines, Inc., Detroit,
Home Office), transportation-motor, $958,369,
35,369, 80.
Diamond Screw Products Co., Wyandotte,
ich., steel and brass nuts, $20,500, $20,500,

T. Mason & Co., Detroit, nonferrous scrap
tals, $27,000, $17,000, 75.
White Motor Co., Cleveland, engines for
f-trac, $58,937, $58,937, 85.
Operadio Mfg. Co., St. Charles, Ill., elec-
nic amplifiers, $350,000, $324,500, 75.
Toledo, Peoria & Western RR, East Peoria,
, transportation-rail, $230,500, $230,500, 65.
Chicago, Indianapolis & Louisville RR Co.,
hicago (Home Office), transportation-rail,
,900, $9,900, 80.
Illinois Central RR Co., Chicago (Home Of-
ce), transportation-rail, $459,750, $459,750, 80.
Chisholm, Boyd & White Co., Chicago, Boyd
ses, $30,816, $30,816, 90.
Ohio Oil Co., Mt. Vernon, Ind., pipeline,
30,000, $430,000, 50.
Marquette Bolt & Rivet Co., Chicago, bolts,
ts, rivets, $50,895, $50,895, 75.
Potter & Brumfield Mfg. Co., Inc., Prince-
n, Ind., electrical relays, $150,000, $150,000,

Nat'l Automatic Tool Co., Richmond, Ind.,
ring machine tools, $426,357, $426,357, 80.
Burton Auto Spring Corp., Chicago, springs,
6,241, $56,241, 75.
American Phenolic Corp., Chicago, connec-
rs for elec. gears, $800,088, $722,536, 75.
Excel Corporation, Elkhart, Indiana, metal
ndow assemblies, $150,000, $150,000, 75.
Minnesota, St. Paul & Ste. Marie RR Co.,
Minneapolis, transportation-rail, $2,994,210,
41,760, $1,322,250, 80, 65.
Minnesota Mining & Mfg. Co., St. Paul, ad-
sives, coatings and abrasives, tapes, $655,-
0, $600,670, 60.
Missouri Pacific Railroad Co., St. Louis,
eight train cars, $10,756,830, $9,586,949, 80.
Missouri Pacific Railroad Co., St. Louis,
ansportation-rail, $1,898,500, $1,459,360, 65.
The O. A. Sutton Corp., Wichita, Kansas,
dnance, $268,405, $268,405, 80.
Dixie Highway Express, Inc., New Orleans,
otor vehicle transp., $135,000, $135,000, 70.
Rheem Mfg. Co., Houston, steel drums,
28,485, $160,000, 75.
Avondale Marine Ways, Inc., Jefferson Par-
h, La., shipyard facilities, $200,679, $200,679,

Schulz Tool & Mfg. Co., Inc., San Gabriel,
alif., control valves, $23,087, $23,087, 90.
Hawaiian Cement Co., Ltd., Honolulu,
awaii, portland cement, $4,500,000, $4,308,-
8, 70.
Calif. Metals Co., San Francisco, Calif.,
rap metals, $168,432, $35,624, 75.
Spokane, Portland & Seattle RR Co., Port-
nd, (Home Office), freight cars, $1,964,200,
1,964,200, 80.

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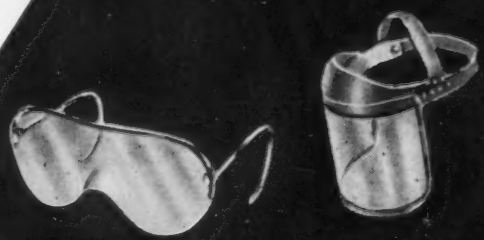

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THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

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NO MAINTENANCE PROBLEMS.

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ALL PARTS ARE SOLIDLY BOLTED TOGETHER.

Write for the latest reprint of our Engineering Catalog.

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

STEEL CONSTRUCTION NEWS

Fabricated Steel Awards this week included the following:

2000 **Tons,** Montgomery County, Pa., for highway bridges for Pennsylvania State Dept. of Highways, to American Bridge Co., Pittsburgh.

200 **Tons,** Pittsylvania County, Va., boiler house, Frank M. Weaver, Landale, Pa., general contractor.

130 **Tons,** Philadelphia, building extension for Richard C. Remmey Co. to American Bridge Co., Pittsburgh.

100 **Tons,** Lancaster County, Pa., highway bridge for Pennsylvania State Dept. of Highways, to Bethlehem Steel Co., Bethlehem.

Fabricated Steel inquiries this week included the following:

927 **Tons,** Cumberland and York Counties, Pa., Divided highway and three I-beam bridges. Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids to August 24.

865 **Tons,** Union County, N. J., highway bridge on Route 4, Sect. 9B for New Jersey State Highway Dept., bids to August 21.

250 **Tons,** Camden, N. J., addition to Courthouse, bids due August 16.

182 **Tons,** Fulton County, Pa., Reinforced concrete bridge and three I-beam bridges. Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids to August 24.

Reinforcing Bar Awards this week included the following.

192 **Tons,** Cumberland and York Counties, Pa., Divided highway and three I-beam bridges. Pennsylvania Dept. of Highways, Harrisburg, Pa. Bids to August 24.

Reinforcing Bar Inquiries this week included the following:

8000 **Tons,** Indianapolis, Fort Benjamin Harrison. Bids due Sept. 11.

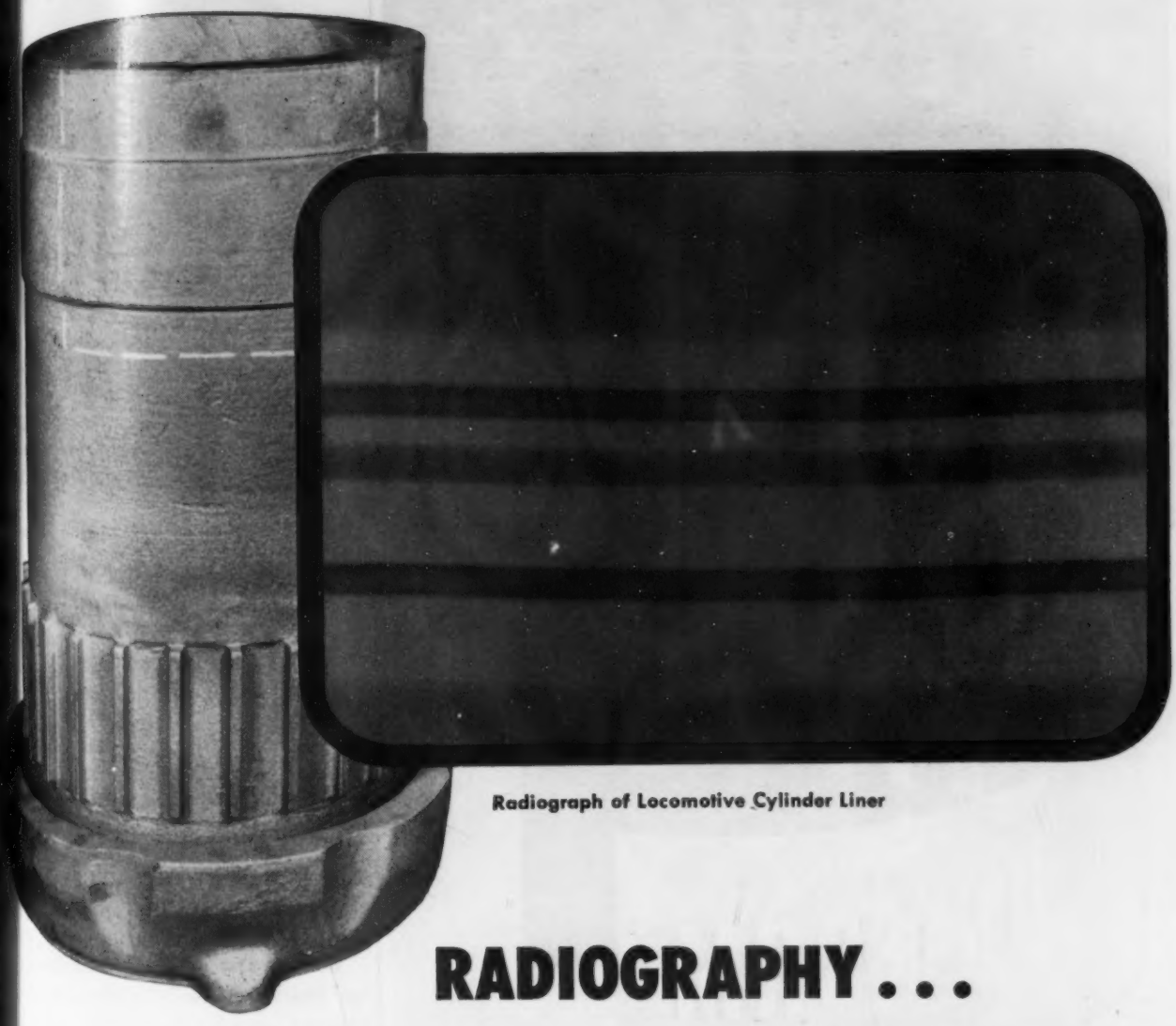
950 **Tons,** Rochester, Minn., Mayo Memorial Hospital, University of Minnesota. bids due Sept. 29.

Spanish Loan Has Mineral Motive

Part of a new $5,600,000 Export-Import Bank loan to Spain is scheduled for use in increasing production of a number of short-supply minerals.

Bank officials said $3,200,000 of the sum will aid in production of iron ore, copper, lead, sulphur, pyrites, and tungsten. Development of additional hydroelectric power in the Madrid area is to be paid for with the remaining $2,400,000. The area concerned has not met requirements for electric power since 1943.

Total credits extended to Spain in this calendar year now have been increased to $36,100,000.



Radiograph of Locomotive Cylinder Liner

RADIOGRAPHY . . .
one factor in Diesel dependability

DIESEL LOCOMOTIVES take millions of miles of service in their stride. They've won the acclaim of roads and riders alike for their smooth speed and dependability.

Radiography does its share in this dependability. Such parts as the cylinder liner shown above are checked for subsurface faults that could cause breakdowns if undetected—or, if discovered during machining, cost valuable time.

More and more foundries make it a practice to radiograph their castings. It lets them know they release only high-quality castings. It frequently points the way to improved casting methods and increased yield in production runs.

You can find out how Radiography can improve operations in your plant by talking it over with an x-ray dealer. And you can send to us for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY
X-ray Division • Rochester 4, N. Y.

Radiography . . .
another important function of photography

Kodak
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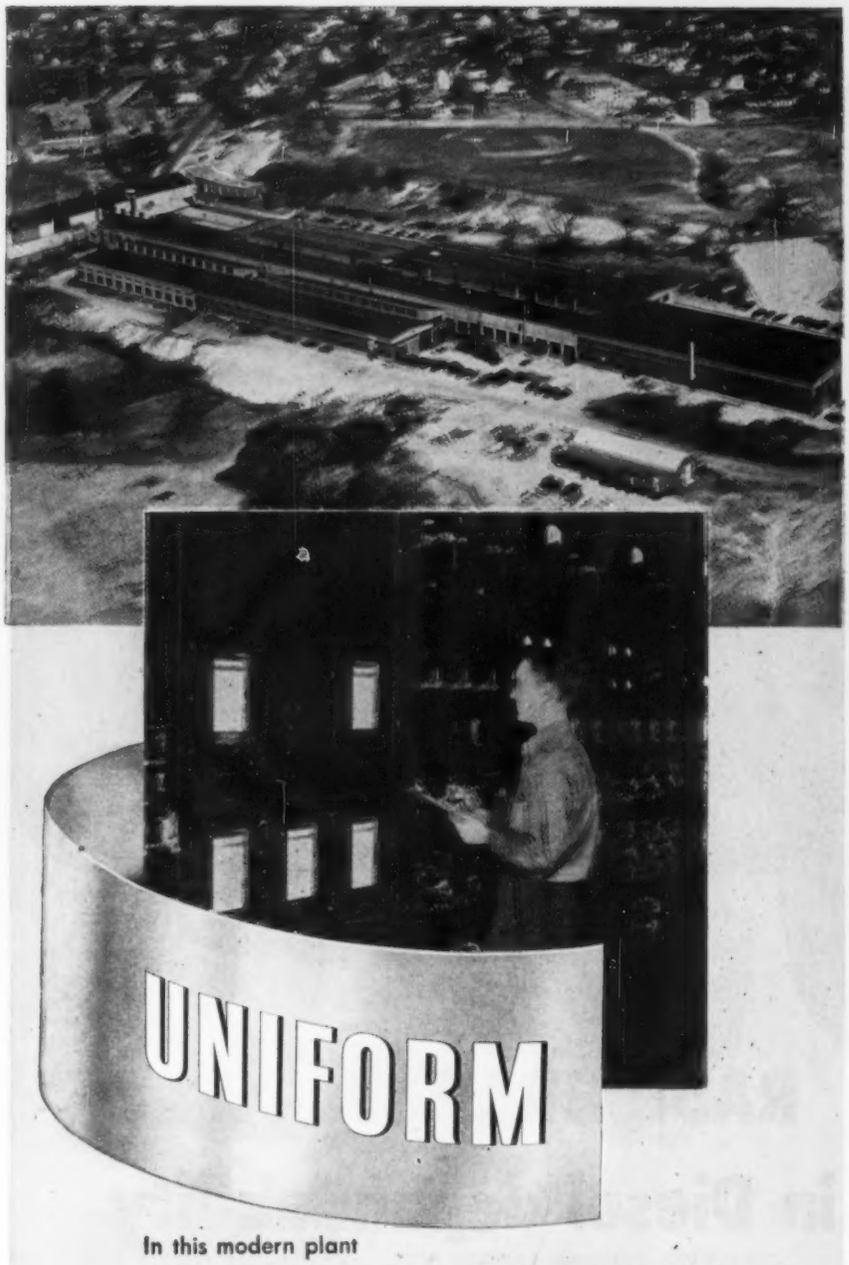


In this modern plant
skilled craftsmen, modern equipment and scientific controls all combine forces to produce strip steel of consistently uniform quality. Wallingford uniformity means that gage, temper and surface are in all ways and at all times the same. Edges are always smooth and straight, surfaces uniformly clean and flat, widths consistently exact. This uniform quality means savings in preparation time and smoother, faster operation to cut down machine stoppages and minimize rejects.

THE WALLINGFORD STEEL CO.

SINCE 1922

WALLINGFORD, CONNECTICUT, U.S.A.
LOW CARBON • HIGH CARBON
ALLOY • STAINLESS • STRIP and TUBING

R & I Corp. Says New Method Saves Down Time in Oven Repa

Loss in down time needed to r pair coke oven floors can b avoided by a new quick replac ment method, claims Refractory Insulation Corp., New York.

After being thoroughly cleane of slag and particles of coke an carbon are burned out, R & Super No. 3000 mortar is mixe with water thin enough to flo down a chute. The chute distri utes the mortar uniformly ov the floor to the normal level of th brick floor.

One-half the floor is poure from one side and the other ha from the other side. The oven' residual heat sets the refractor cement. Flint hard, it stays abra sion resistant under the oven' high temperatures, claims th firm.

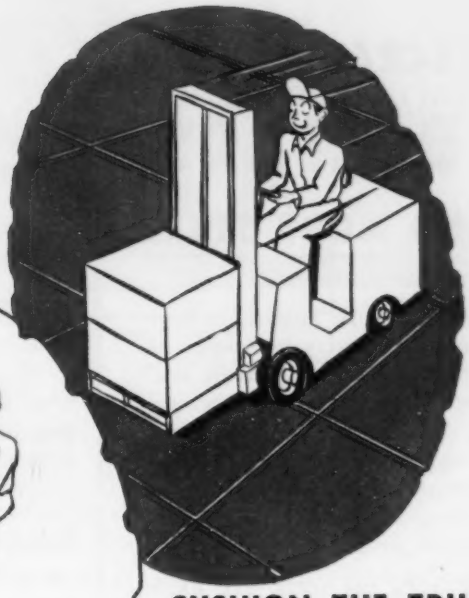
Blisters that may have forme in the swiftly set cement are lev eled off by pusher rams ru through the oven a few times. S that the first load of coke can b pushed along the new floor, 2-in wooden planks are spread out t provide a charcoal lubricant. Th doors are finally sealed wit "Luting Mud," an industrial clay

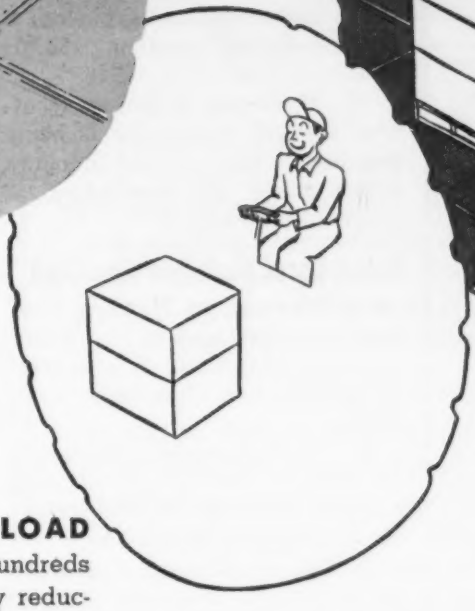
O'Hare Field to Produce C-119's

Fairchild Engine and Airplan Corp. has taken over the manufac turing facilities at O'Hare Inter national Airport, Chicago, for th production of C-119 cargo packe planes. Shipments of jigs, dies an fixtures and other governmen equipment are being installed.

The reactivation program supervised by the midcentral ai procurement district, will caus the relocation of several govern ment bureaus now occupying th large factory building and hang ars at the field. They will hous new equipment for the productio of this cargo aircraft which wil be installed over a 16-month pe riod. The C-119's are presentl being produced at Kaiser-Fraser Willow Run, Mich., plant and wil continue in production there unti the O'Hare plant begins output.

Mono-Cushions
cut the cost of bumps





CUSHION THE FLOOR
g, burly Mono-Cushions soak up
lts and jars both ways, protect
oors from the pounding a heavily
den truck can dish out.

CUSHION THE TRUCK
Mono-Cushions can reduce truck maintenance as much as 40 per cent, because they absorb more shock and shock load than any other type of industrial tire, size for size.

CUSHION THE LOAD
Mono-Cushions are saving hundreds of users plenty of money by reducing load breakage, giving both load and driver a smooth ride.

OUR BEST SOURCE FOR TIRES is the manucturer of your equipment. He can supply ou, through his service branches, with the type Monarch Tire engineered for your equipment.

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SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

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SCRAP MEANS

DOLLARS

AND MORE STEEL!

● You'll be amazed at how many hundred pounds of high-dollar scrap iron and steel your plant is harboring . . . old and obsolete dies, tools and machinery, broken parts, unreturned scrap clippings and blankings, and just plain junk.

Prices for scrap are high today . . . call your scrap dealer . . . make old machinery help pay for new, efficient machines.

Shortages of steel can be eased if you get this scrap on its way through dealers to steel mills . . . every ton of scrap helps make 2 tons of new steel.

Tell your plant foremen to start gathering scrap today . . . survey your machinery inventories for old, useless "clunkers."

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REPUBLIC STEEL CORPORATION
General Offices • Cleveland 1, Ohio

Petroleum Industry May Add 190,000 Tons of Sulphur to Supply

Plans which will increase by 190,000 tons per year the nation's supply of sulphur have been made by the petroleum industry, according to Petroleum Administration for Defense.

PAD says the industry is now producing 5500 more tons of sulphur than it is using. While petroleum producers intend to use 638,000 long tons of the material this year, they expect to release 643,500 tons gained through recovery processes.

A survey of refiners and other branches of the industry has been made by PAD to determine potential availability of sulphur. This survey is said to have shown that:

(1) The industry is directly reclaiming the equivalent of 170,000 long tons.

(2) Spent acids and acid sludges are producing another 133,000 tons.

(3) Hydrogen sulphide recovered through processing is being supplied to the chemical industry, which takes the equivalent of 340,500 tons from it.

Takes Local Metalworking Lead

Metalworking of Houston, Tex., has taken the lead in the Southwest indicates a survey conducted by the Houston Chamber of Commerce.

The metal manufacturing group accounts for 36.7 pct of the total number employed in non-agricultural industries in the city.

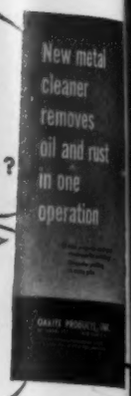
At the present rate of demand, sales of metal goods for the year are estimated to reach $400 million and payrolls may register an all-time high of $100 million. Since 1947 the number of factories producing iron, steel, brass and other metal products has risen from 259 to 308.

June Strike Rate Down

Labor Dept. reports 375 strikes originating in June, as compared with 400 in May. Man-days lost due to strikes dropped from 1,750,000 in May to 1,600,000 in June.

HAVE YOU HEARD ABOUT THIS NEW METAL CLEANER?

IT CAN SAVE MONEY FOR YOU



Oakite Compound No. 33

REMOVES OIL
at the same time that it
REMOVES RUST...
And at the same time it prepares the metal for painting

Oakite Compound No. 33 is a great soak cleaner for steel, cast iron, aluminum sheet and castings. It removes oil, rust, heat scale, other oxides, carbon smut, soldering and welding residues, identification inks and other soils. *It frequently eliminates pickling operations on moderately rusty steel.*

Oakite Compound No. 33 is great for hand-swabbing on metal surfaces too large to be soaked in tanks. It can save money for you in many ways.

FREE For a copy of Folder F7993 *"New metal cleaner removes oil and rust in one operation"*, write to Oakite Products, Inc., 30H Thames St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE
Technical Service Representatives Located in Principal Cities of United States and Canada

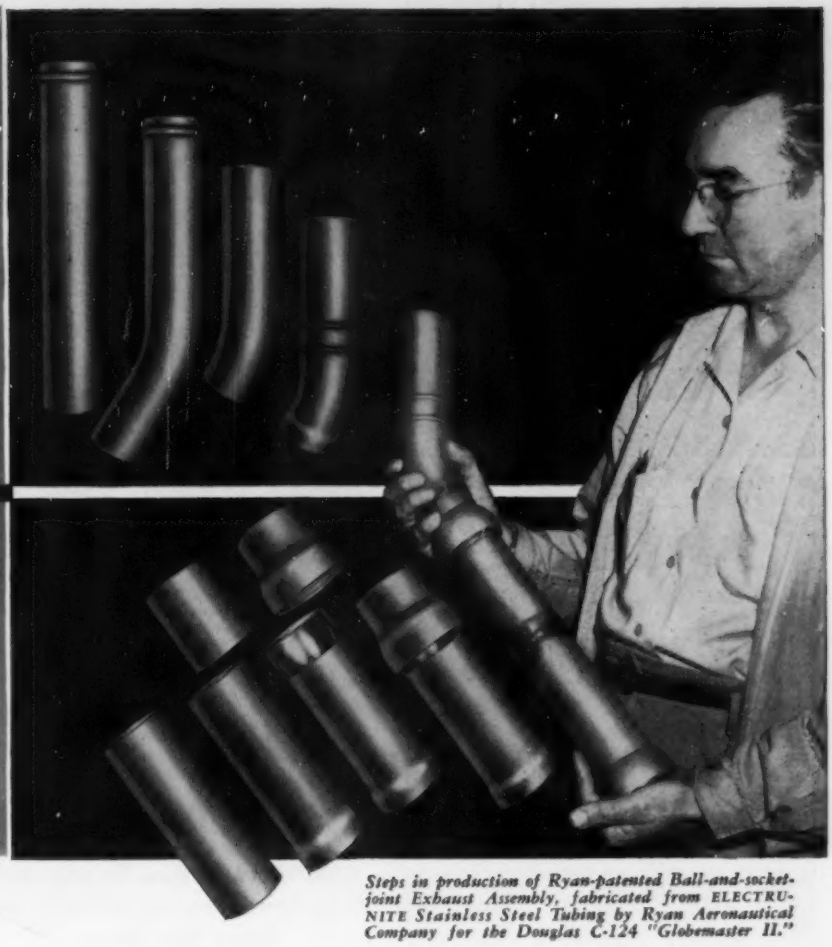
They're saying

Mighty Fine Things

about

ELECTRUNITE TUBING

at Ryan...



Steps in production of Ryan-patented Ball-and-socket-joint Exhaust Assembly, fabricated from ELECTRUNITE *Stainless Steel Tubing by Ryan Aeronautical Company for the Douglas C-124 "Globemaster II."*

"...lends itself very well to achieving unusual configurations..."

•

"...production is conducted with high degree of efficiency and low factor of waste..."

•

*"...*ELECTRUNITE'S *uniform wall thickness allows sure, safe, controllable bending of the tube without wrinkling..."*

•

"...uniform in diameter, strength, weight, workability and other characteristics..."

Expanded on a punch press, swaged, bent to shape . . . then subjected to hundreds of service hours at cherry-red exhaust temperatures and under severe vibration . . . that's the punishment dealt out to these stainless steel exhaust stacks on the Douglas C-124 "Globemaster II."

High physical and metallurgical accuracy are two of many advantages Ryan gained by specifying Republic ELECTRUNITE Tubing. Ryan metallurgists were assisted in their choice of the right ENDURO stainless steel alloy by Republic's 3-Dimension Metallurgical Service . . . a combination of field, laboratory, and mill metallurgical advice.

You can have the benefits of Republic's 3-Dimension Metallurgical Service for your products . . . a letter or phone call will bring the Republic Field Metallurgist to you.

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STAINLESS STEEL TUBING AND PIPE

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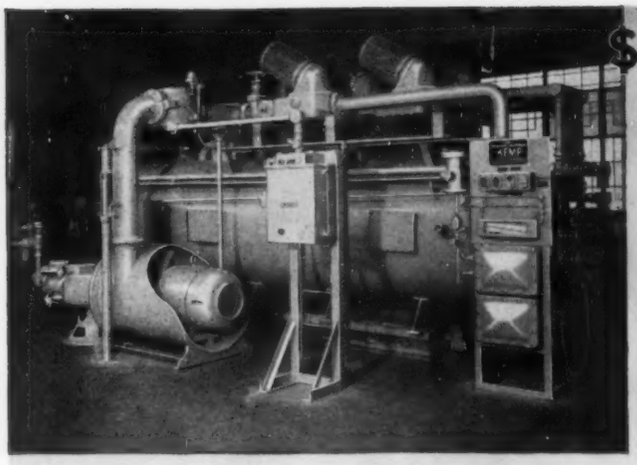
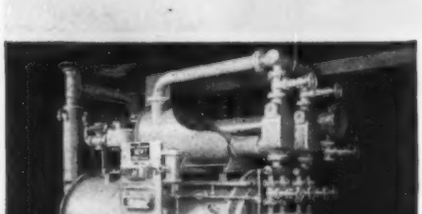
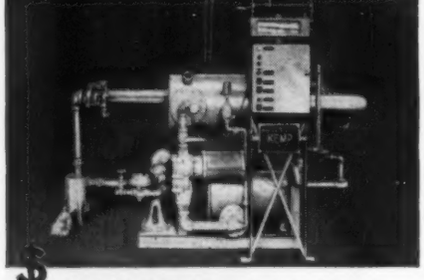


Model 60 MIHE produces 60,000 cfh . . . is widely used for purging and blanketing in the petroleum industry.

Why Pay Premium Prices For Inerts?



Model 6 MIHE is ideal for agitating, bubbling and blanketing in synthetic resin plants . . . delivers 6000 cfh.



Model 1 MIHE offers all the features of larger equipment . . . delivers 1000 cfh . . . is fully automatic.

KEMP Inert Gas Producers Can Save You up to 90% on Inert Gas Costs

Whether you now use bottled inerts or produce them with old-fashioned equipment, switch to a Kemp Inert Gas Generator and save 83% to 90% on your inert gas costs. Kemp Inert Gas Producers and Kemp Nitrogen Producers are available in standard models with capacities ranging from 500 to 200,000 cfh for fully automatic operation.

ABSOLUTELY DEPENDABLE

No matter what the demand, Kemp Inert Gas Generators give you the same analysis Inert Gas from 20% to 100% of capacity. The Kemp Industrial Carburetor, part of each installation, burns ordinary gas just as it comes from the mains. Assures complete combustion without "tinkering." Produces a clean, chemically inert gas to meet your most exacting requirements.

SEND FOR DATA

Whatever your requirements, always specify Kemp. *To find out how you can benefit:* Tell us your atmosphere gas problem, and we'll show you how Kemp can solve it and save you money!

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Write for Bulletin I-10 for technical information.
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CARBURETORS • BURNERS • FIRE CHECKS • ATMOSPHERE & INERT GAS GENERATORS
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More Workers Absorbed By Machinery, Ordnance, Instrument

Hiring rates continue high in the machinery, ordnance, instruments industries, and in other fields closely related to production for national defense.

Figures compiled by the Bureau of Labor Statistics showed an all-industry hiring rate in June of 4 per 1000 employees. This average was exceeded in the industries named above. In the apparel, textiles, and furniture fields, the rate was lower than the rate of separation, because of layoffs, resignations, and other causes.

In most consumer goods industries, where employment opportunities have declined in recent months, relatively small increases in voluntary separations were reported, as compared to data for June, 1950.

Europe Works at Record Rate

Industrial production in Western Europe has hit a record 4 pct above prewar rates, Economic Cooperation Administration reports.

Peak production rate was reached in April, the latest month for which ECA figures are available.

Machinery and equipment which ranked first among Western Europe's imports from the U. S. in 1950, have dropped to fifth place. Coal is now a leading import.

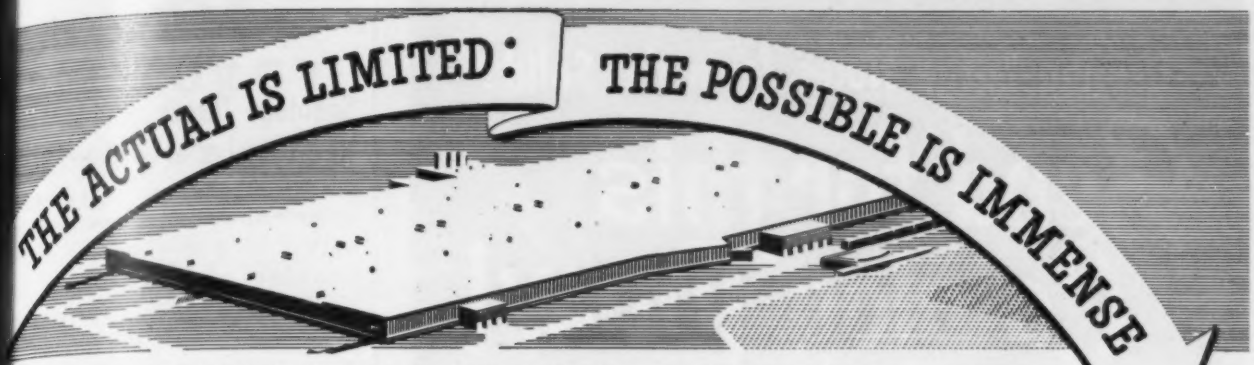
Western European imports of iron and steel mill products were valued at $28,800,000 in fiscal 1951, as compared with $86,400,000 in fiscal 1950.

Record Power Load

U. S. power companies produced a record of 351,774,420,000 kw hrs in fiscal 1951, Federal Power Commission reports.

Net increase in installed capacity of generating plants in utility service in the first 6 months of 1951 was 3,377,285 kw.

Industrial production of power was 5,126,085,000 kw hrs in June, an increase of 4.1 pct over June 1950.



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1951

STEEL DESIGN SAVES MATERIALS AND MAN-HOURS ... CUTS COST 60%

WHEN a design utilizes the economies of welded steel, it can be produced for less cost because:

With welded steel, material costs are less. Only 50% to 25% as much metal is required. And, pound for pound, steel costs 75% less, giving an initial 7-to-1 cost benefit with which to start your designs.

With welded steel, fewer man-hours are needed for fabrication regardless of quantity produced. Smaller lots can be manufactured economically using simple tools. As quantities increase, designs can be modified further to replace some welding with bending, thus further reducing production costs.

Wherever costs with steel designs are higher, invariably the designs have fallen short of achieving the ultimate in savings possible with arc welding, or the products have been "over-designed." A restudy of every design by production engineers, before it becomes "frozen" for manufacture, helps eliminate costly details.

Your Lincoln Welding Engineer will gladly assist in analyzing your product requirements to cut costs.

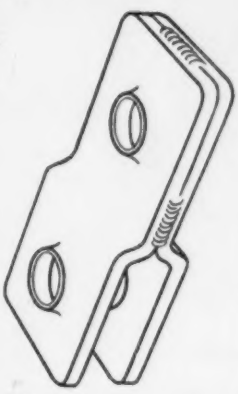


Fig. 5—Steel Stamping *from light gauge metal is formed in a die and welded. Weight is cut to 2 pounds . . . cost to 22¢ . . . a saving of 62% over Fig. 2. Saves 85% over Fig. 1.*

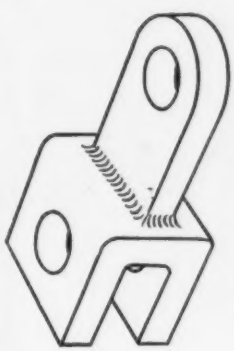


Fig. 4—Saves 16% Cost *over Fig. 2 by replacing tubing with simple "U" formed from bent steel strap. Holes are prepunched prior to welding. Weighs 2½ pounds . . . costs 49¢.*

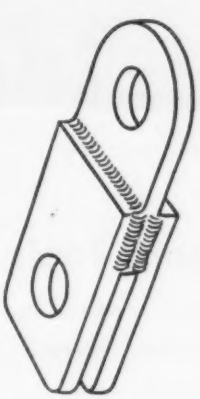


Fig. 3—Uses Sheared Steel Strip *to cut 10% from production costs, as compared with Fig. 2. Requires only simplest of fabricating equipment. Weight is 3 pounds . . . costs 54¢.*

the ACTUAL increasing the YIELD

Fig. 1—Original Design. *Machine clevis weighs 7 pounds . . . requires drilling, boring, reaming and spotfacing operations. Costs $1.45 for material and labor.*

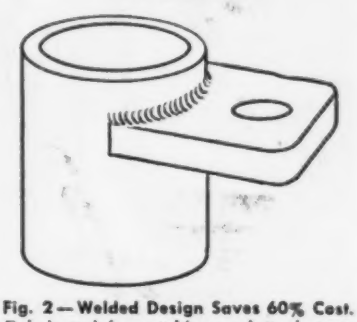


Fig. 2—Welded Design Saves 60% Cost. *Fabricated from tubing and steel strap. Needs only fast, simple punching operation. Weighs 3¼ pounds . . . costs only 58¢.*

the IMMENSITY of the POSSIBLE

Lower Costs Regardless of Quantity Produced

SEE HOW STEEL DESIGN CUTS COSTS STILL FURTHER

Machine Design Studies are available to designers and production men. Write on your letterhead to Dept. 59,

THE LINCOLN ELECTRIC COMPANY

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Drilling Large Holes from the Solid?

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Immediate Delivery

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CONNER TOOL & CUTTER CO., 1000 E. McNichols Rd., Detroit 3, Mich.

Please send me your new spade drill catalog immediately •

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Sabotage Threat Aired In New Chamber of Commerce Book

Civilian and military experts on industrial sabotage got pens together in a new booklet of the Chamber of Commerce of the United States. Stressing the theme that it's time to beware of possible saboteurs, the booklet tries to alert management to the war danger.

It urges immediate steps to organize defense against the saboteur, formation of a sabotage and espionage committee for every defense plant, and establishment of a plant control center to serve as a clearing house for gathering, classifying, collating and evaluating information.

Enemy agents, emotionally unstable and "disgruntled" workers are a menace to the defense effort, writes Maj. Gen. Francis H. Griswold, Munitions Board's military director of production.

Build Roads to Ship Minerals

Eleven new access roads to get strategic and critical minerals from mines to markets will be built under Defense Minerals Administration authorization.

One of these roads, leading to an antimony-tungsten property at Stibnite, Ida., is already open. Two others—one leading to a uranium prospect near Yellowstone Park, and the other near a tungsten property at Kernville, Calif., are nearing completion.

Projects now under construction include roads approaching a cobalt-copper mine in Lemhi County, Ida., and two tungsten mines at Bishop, Calif.

More than 50 other applications are now being studied by DMA.

Clairton Coke Battery Producing

A new battery of 87 coke ovens at the Clairton Plant of U. S. Steel Co. is in partial operation. The battery is scheduled for completion within 2 months. Capacity will be 1700 tons of coke per day. By-product gas production will be 15 million cu ft at every 24 hours.

(Advertisement)

POWDER METALLURGY

ITS EFFECT OPERATING SAVINGS!

Cost-conscious users of production machinery are becoming increasingly aware of the over-all savings made possible in the operation of machines equipped with "COMPO" and "POWDIRON" bearings and parts. Maintenance expenses are reduced, since in many instances "COMPO" and "POWDIRON" need no re-lubrication during the life of the equipment. When more severe service conditions do require re-oiling, the job is extremely simple—it is only necessary to bring oil into contact with the part. When this simple attention is required it is only at infrequent intervals.

OTHER OPERATING SAVINGS

The "COMPO" and "POWDIRON" method of lubrication maintains an oil film on the surface of the bearing or part at all times, thus preventing metal-to-metal contact. This feature reduces wear and prevents scoring of shafts. Bearing replacement is a very infrequent occurrence, and machine downtime is greatly reduced.

Electric drills equipped with "COMPO" bearings run smoothly and quietly, with minimum maintenance requirements.

HOUSEHOLD AND BUSINESS APPLICATIONS

While the average user of household appliances or business machines is less aware of operating costs than the industrial executive, the long life and simple maintenance of "COMPO" and "POWDIRON" are important selling advantages in these types of products too.

The manufacturer can build these good-will features into his products at surprisingly low cost, since the powder metallurgy process is inherently economical, especially in high-volume runs. Information on "COMPO" and "POWDIRON" for specific applications may be obtained from Bound Brook Oil-Less Bearing Company, Bound Brook, N. J.

Low Operating and Maintenance Cost IS ONE OF THE 6* OUTSTANDING ADVANTAGES OF "COMPO"® and "POWDIRON"®

BEARINGS AND PARTS

*THE 6 OUTSTANDING ADVANTAGES OF

"COMPO" and "POWDIRON" are

1. Low operating and maintenance cost
2. Low installation cost
3. High load capacity at high speeds
4. Extreme quietness
5. Efficient lubrication
6. Low unit cost

Constantly maintained oil film keeps both *starting* and *running* friction down. Replacements are virtually nil — relubrication is simple, if needed! Incorporate "COMPO" and "POWDIRON" bearings and parts in *your* product designs — give your customers the cost-saving features they want.

Cut costs *yourself* by using stock "COMPO" bearings wherever possible — write on company letterhead for up-to-minute catalog.

Send for this FREE Booklet

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OIL-LESS BEARING COMPANY

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WYANDOTTE—

BEST PREPARED TO HELP YOU SOLVE CONVERSION PROBLEMS

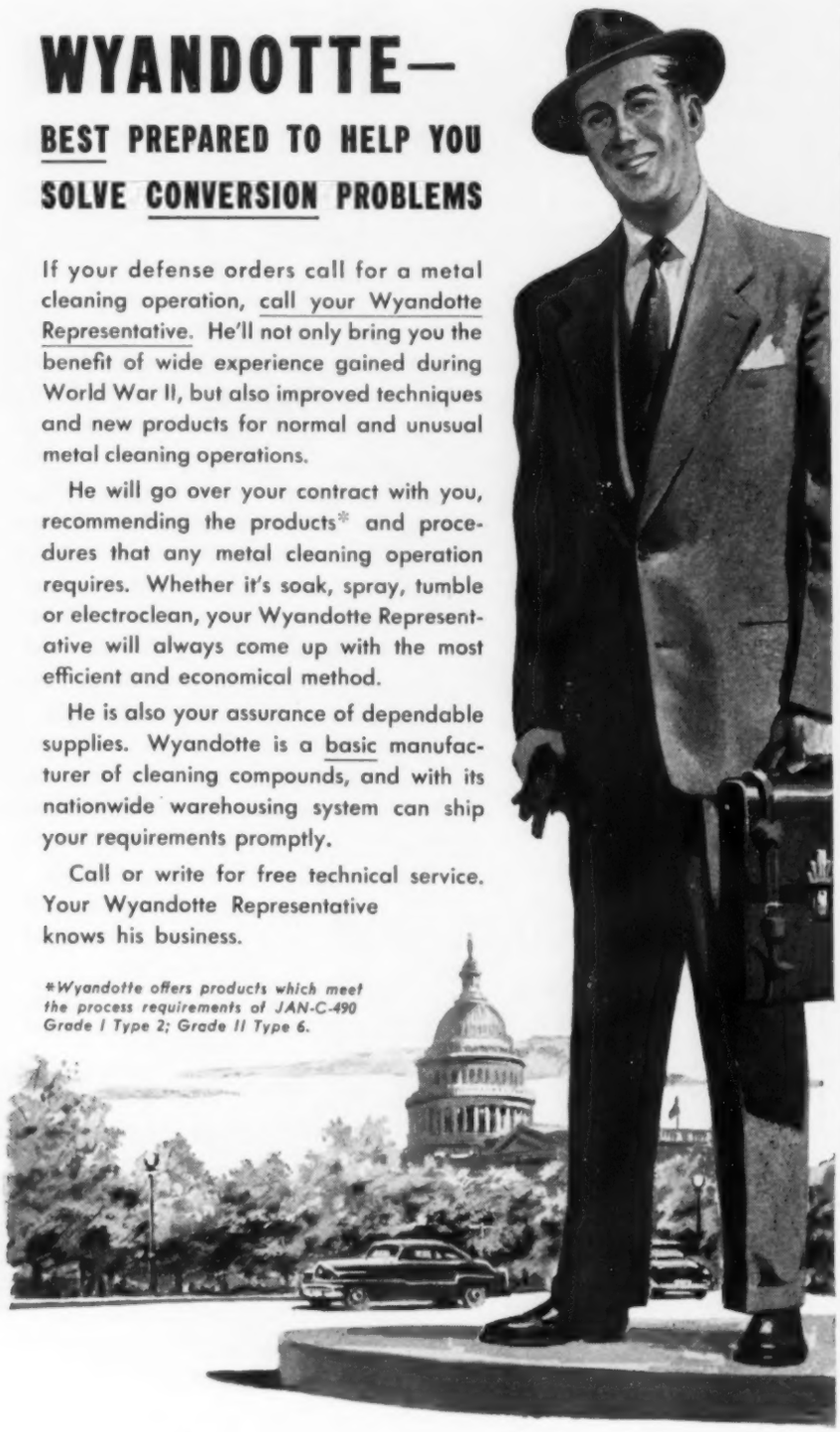
If your defense orders call for a metal cleaning operation, call your Wyandotte Representative. He'll not only bring you the benefit of wide experience gained during World War II, but also improved techniques and new products for normal and unusual metal cleaning operations.

He will go over your contract with you, recommending the products* and procedures that any metal cleaning operation requires. Whether it's soak, spray, tumble or electroclean, your Wyandotte Representative will always come up with the most efficient and economical method.

He is also your assurance of dependable supplies. Wyandotte is a basic manufacturer of cleaning compounds, and with its nationwide warehousing system can ship your requirements promptly.

Call or write for free technical service. Your Wyandotte Representative knows his business.

*Wyandotte offers products which meet the process requirements of JAN-C-490 Grade I Type 2; Grade II Type 6.



"Cleaning the World"

THE WYANDOTTE LINE—products for burnishing and burring, vat, electro, steam gun, washing machine and emulsion cleaning, paint stripping, acid pickling, related surface treatments and spray booth compounds. An all-purpose floor absorbent: Zorball. In fact, specialized products for every cleaning need.

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN
Service Representatives in 88 Cities

Wyandotte
REG. U. S. PAT. OFF.

To Make Gun Computers

The $10 million governme owned plant at Normandy a Fullerton Aves., Chicago, has be taken over by the Western Electr Co. for the production of an aircraft fire control data com puters used on 90 and 120 m anti-aircraft guns. Revere Copp and Brass, Inc., operated the pla for the government during t war, manufacturing brass shee for cartridge cases.

Machine tools will be provide by Western Electric under a facil ties contract and actual produc tion of the computers will be ma under a supply contract. Most the equipment in the plant is be ing removed and equipment is be ing installed as soon as possibl Production is expected to sta this December.

Pressed Steel Out of Red

Pressed Steel Car Co., Inc., Ne York, has rushed out of the re Net profit at the end of the fir half of 1951 was $1,005,843. Fo the like period last year, the fir recorded a loss of $699,146.

Credit for the earning improve ment is given by company official to the higher rate of freight ca production and product diversifi cation program. Pressed Stee acquired four subsidaries in 195 All operated at a profit this yea and backlogs assure good busines ahead. Chicago Steel Tank Co. builders of special industria tanks, was purchased by Presse Steel last month.

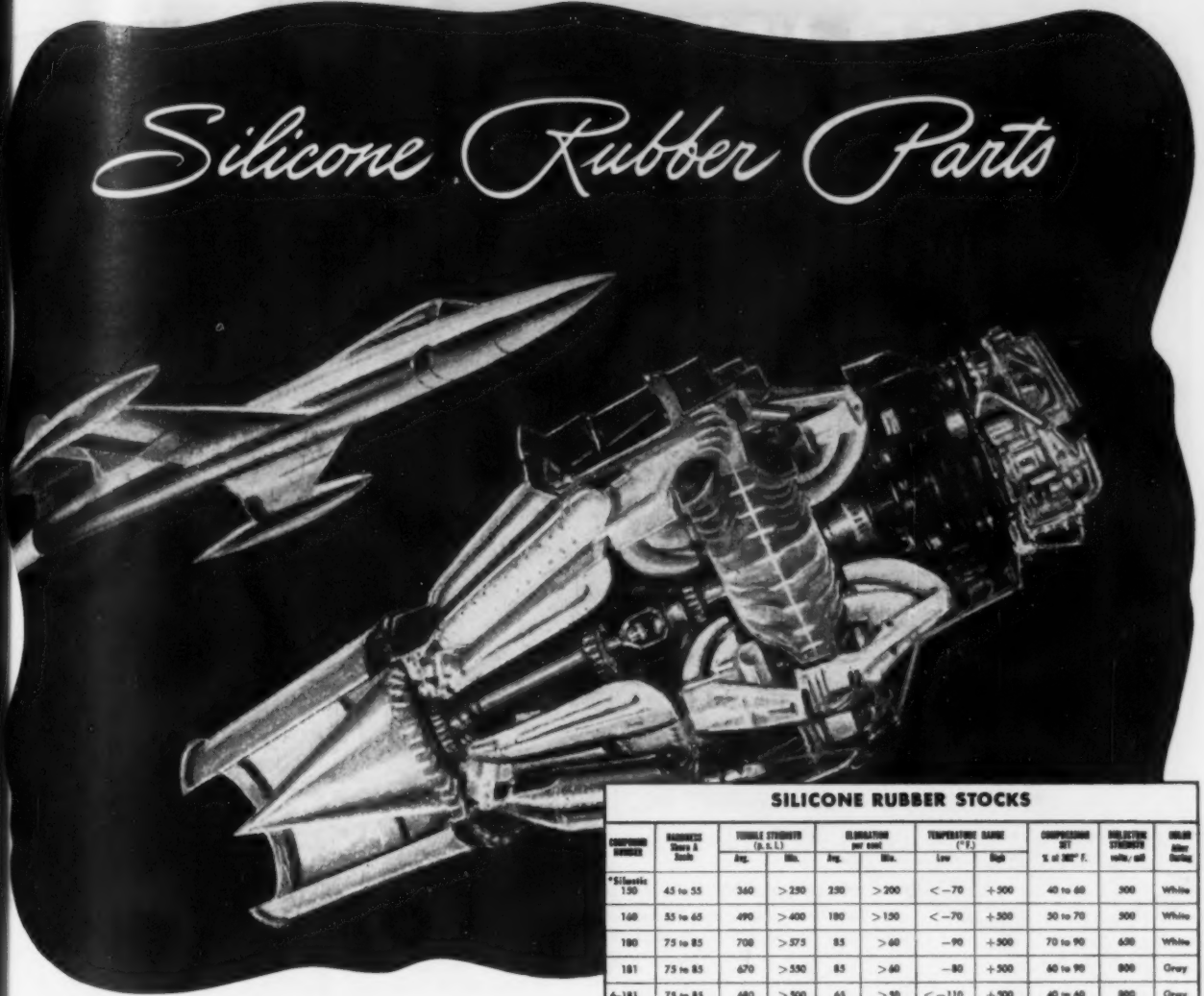
Electrical Equipment Order

Westinghouse Electric Corp will supply the world's larges single flywheel motor generato set to Great Lakes Steel Corp. a part of a multi-million dollar con tract for electrical equipment fo a new 72-in. slabbing mill.

The MG set will be powered b a 9000 hp motor. The flywhee will weigh 65 tons, will have a capacity of 250,000 hp-second stored energy.

Shipment of the equipment wil be made about mid-summer 1952

Silicone Rubber Parts



SILICONE RUBBER STOCKS

COMPOUND NUMBER	HARDNESS Shore A Scale	TENSILE STRENGTH (p.s.i.) Avg.	TENSILE STRENGTH (p.s.i.) Min.	ELONGATION per cent Avg.	ELONGATION per cent Min.	TEMPERATURE RANGE (°F.) Low	TEMPERATURE RANGE (°F.) High	COMPRESSION SET % at 302° F.	DIELECTRIC STRENGTH volts/mil	COLOR After Curing
*Silastic 150	45 to 55	360	>250	250	>200	<−70	+500	40 to 60	500	White
160	55 to 65	490	>400	180	>150	<−70	+500	50 to 70	500	White
180	75 to 85	700	>575	85	>60	−90	+500	70 to 90	650	White
181	75 to 85	670	>550	85	>60	−80	+500	60 to 90	800	Gray
6-181	75 to 85	680	>500	65	>50	<−110	+500	40 to 60	800	Gray
250	40 to 50	650	>550	300	>250	<−110	+500	40 to 60	800	Orange-tan
**G-E 81223	40+5		800		400	−85	+320	65 to 75	480	†
**G-E 81271	50+5		800		250	−85	+320	65 to 75		†

*Registered Trade-Mark of the Dow Corning Corporation.
**Specifications listed for this stock are based on cure of 24 hrs./480° F.
†General Electric silicone rubber can be tinted in a choice of colors.

FOR EXTREME HIGH AND LOW TEMPERATURE APPLICATIONS

ONLY SILICONE rubber parts withstand the severe temperature conditions encountered in whistling, speeding, supersonic jets. These same SILICONE rubber compounds are available for application in transformers, aircraft and marine instruments, internal combustion engines, motors, and generators as well as chemical and electrical equipment.

ONLY SILICONE rubber parts retain their desirable physical, chemical and dielectrical properties within a temperature range of —110° to +500° Fahrenheit. These parts feature excellent resistance to weathering, oxidation, ozone and many chemicals. SILICONE parts advantageously replace many special metal constructions forced upon design engineers by the limited thermal stability of organic rubber compounds.

STALWART is prepared to mold, extrude, punch, and lathe-cut precision SILICONE parts engineered to meet individual requirements as well as S.A.E. and A.S.T.M. specifications.

Write today for the new 16-page, illustrated catalog Number 51SR-1 for additional details.

184-SR

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AIRLESS BLAST CLEANING

• CUTS CLEANING TIME 75%

• SAVES $260 PER MONTH IN MAINTENANCE COSTS

CLEANING TOOLS PRIOR TO PLATING

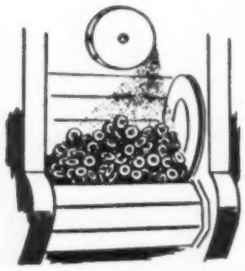
AT AIRCRAFT MECHANICS, INC.
Colorado Springs, Colorado

The Wheelabrator Unit

Quantities of tools that formerly required up to two hours cleaning time are now Wheelabrated in from 7 to 30 minutes at the Aircraft Mechanics, Inc. All work is now cleaned in two to four hours a day where previously an eight hour day was not enough and overtime work was often necessary.

With the Wheelabrator Tumblast, "maintenance and repair parts cost is so negligible as to be insignificant." Thus use of the Wheelabrator saved an average of three hours a day and $260.00 a month which had to be expended in keeping the former equipment in working order.

WHEELABRATING HAS MANY EXCLUSIVE ADVANTAGES



The Exclusive Wheelabrator Tumblast Principle

The reason why Wheelabrator Airless Blast Cleaning is saving money for users everywhere can be found in the perfected design of the Wheelabrator Unit. This unit hurls abrasive by centrifugal force in a controlled pattern. It throws more abrasive and throws it harder per horsepower expended than any other blasting device ever conceived.

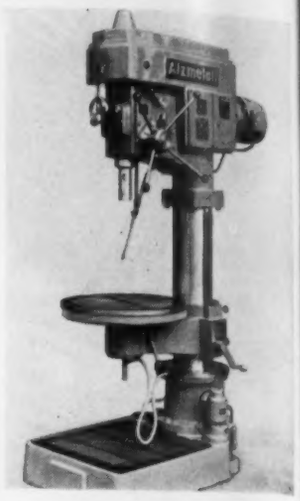
The exclusive tumbling principle of the Wheelabrator Tumblast cascades the work directly beneath the Wheelabrator Unit which whips a continuous stream of abrasive upon the work the full width of the cleaning chamber. It is the simplicity of this Tumblast design and the absence of complicated mechanisms that keeps maintenance costs to a minimum.

For a description of these and other Wheelabrator Features send for your copy of the booklet: "The Airless Wheelabrator, What It Will Do For You."

American
WHEELABRATOR & EQUIPMENT CORP.
510 S. Byrkit St., Mishawaka 3, Indiana

new equipment

Continued from Page



Vertical precision drills

The Alzmetall line of high powered upright precision drills are made in three sizes, with drilling capacities for cast iron ranging between 15/16 and 2 5/16 in.; capacities for steel, from 13/16 to 2 in. The smallest machine has a No. 3 Morse taper spindle and the two larger types have spindles with No. 4 Morse taper. Infinitely variable speed drives, depending on the size of the machine, range from 105 to 1450, 90 to 900 and 40 to 800 rpm. The larger drills have adjustable automatic depth releases and can be equipped with coolant and tapping attachments. *Cosa Corp.*

For more data insert No. 12 on postcard, p.

Welder arc drive control

Arc drive permits the operator to adjust the arc characteristic of a rectifier welder to suit a particular job. The device operates automatically and instantaneously to provide an extra surge of welding current at the moment the arc becomes shorted. This extra surge of current helps clear the arc path and prevents arc outage or sticking of the electrode. Violent and prolonged overshoots and undershoots of welding current, characteristic of rotating types of welding generators, are eliminated. *Westinghouse Electric Corp.*

For more data insert No. 13 on postcard, p.

Turn Page

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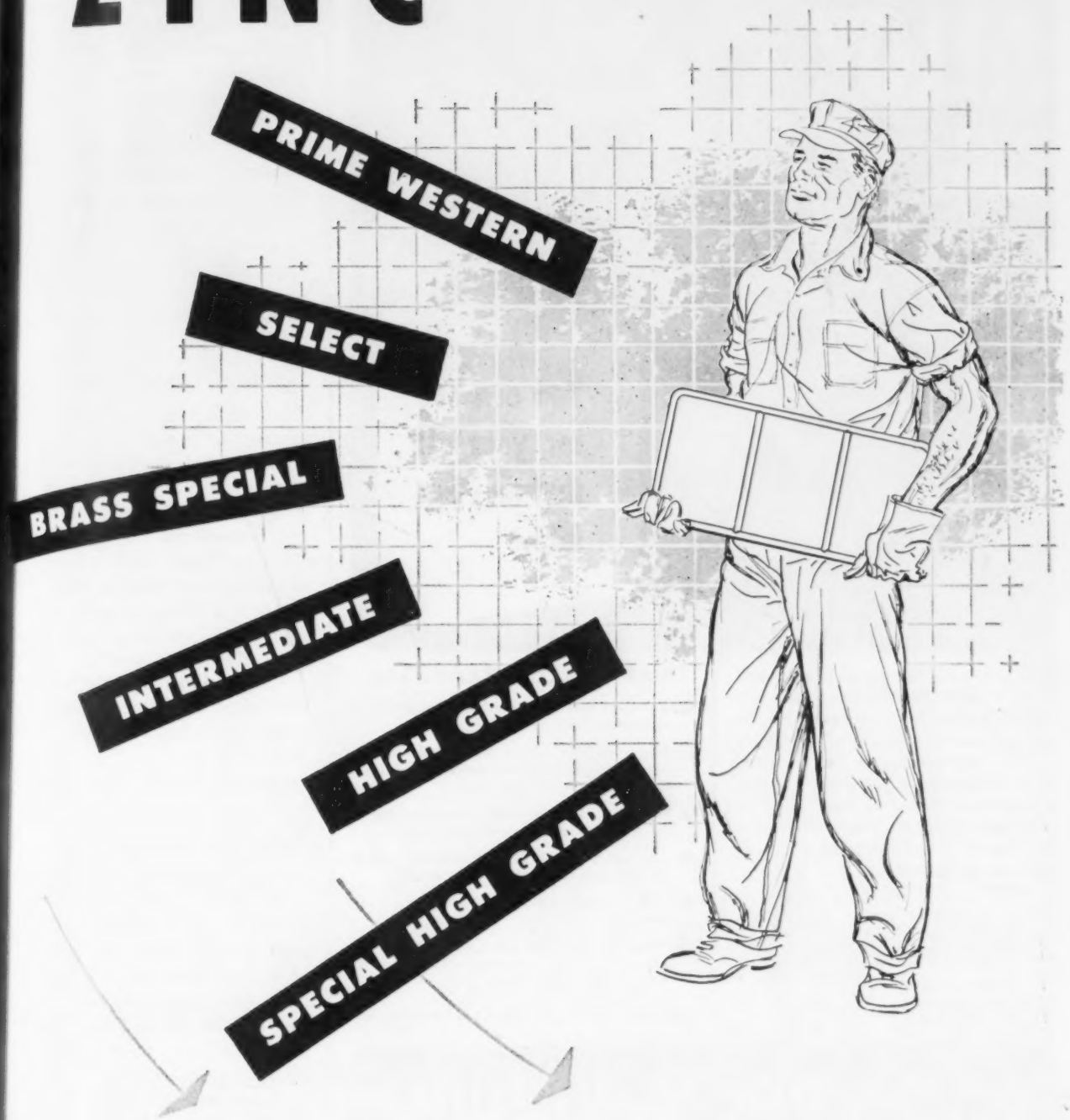
every grade of ZINC
for urgent military and
civilian requirements



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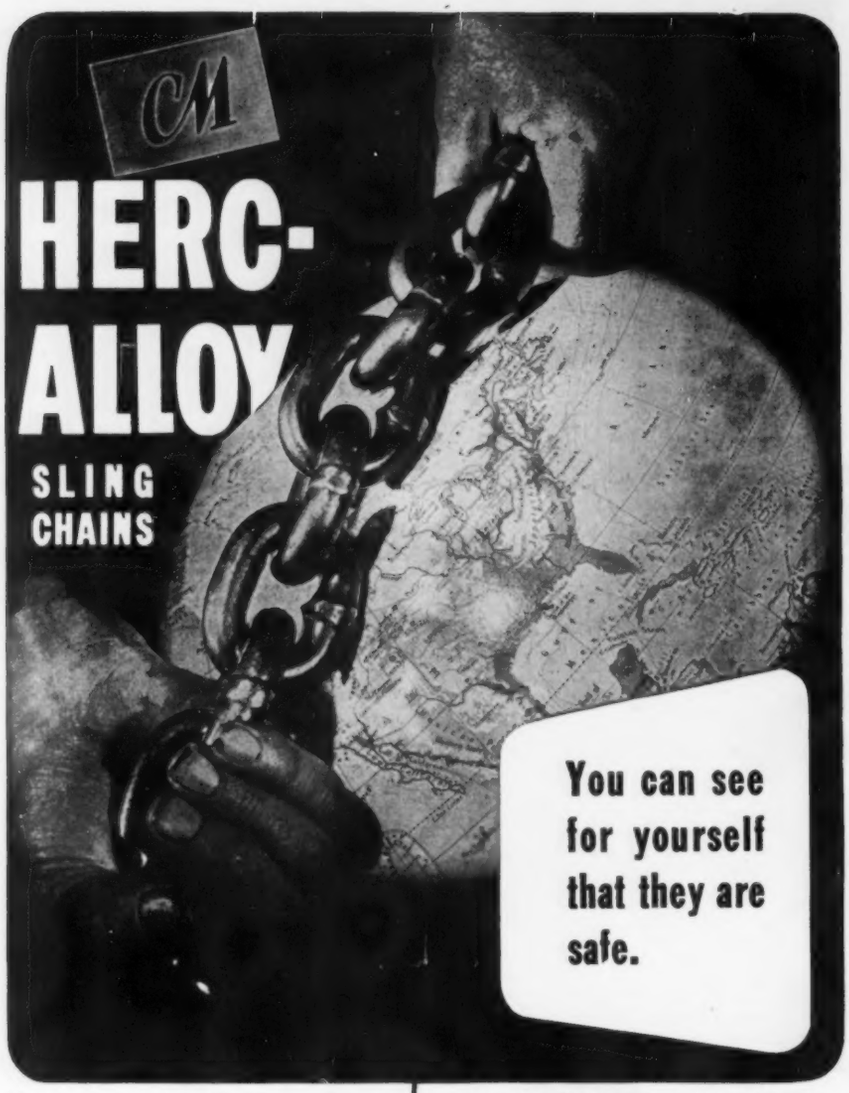
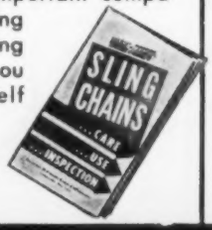


Just one of the big advantages of HERC-ALLOY Sling Chains is that you can determine their serviceability by a simple visual inspection.* Ordinary steel or iron chains, on the contrary, grow dangerously brittle with age... an insidious threat to the safety of men and materials. That's why more and more of the important companies are standardizing on HERC-ALLOY Sling Chains...because you can **see** for yourself that they're safe.

Write for your copy of this new, informative booklet. No charge.



HERC-ALLOY FEATURES

- America's *first* alloy steel sling chain...first to bear a serial number.
- Every CM HERC-ALLOY Sling Chain is alloy steel throughout...links, rings, hooks. There is only one grade...*the best.*
- Every chain is individually tested and accompanied by a certificate of registration.
- Links are side welded for maximum strength by patented INSWELL electric method.
- HERC-ALLOY Chains should never be annealed.
- HERC-ALLOY Chains are lighter...stronger...easier to handle...outlast ordinary chains 4 to 5 times...cost less on the job.

HERC-ALLOY...the chain you can SEE is safe

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CHAIN CORPORATION
(Affiliated with Chisholm-Moore Hoist Corporation)
GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.
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new equipment

Continued

Reproduction paper

No darkroom handling or special reproduction equipment is needed to produce black-on-white photographic intermediates directly from blue prints and other negative originals when using a new photographic reproduction paper. The paper, named Kodagraph Repro-Negative Paper, can be exposed on standard drawing reproduction equipment, in ordinary room light, and processed with standard photographic chemicals. It prints a positive from a negative and vice versa. *Eastman Kodak Co.*

For more data insert No. 14 on postcard, p. 1

Current transformers

The butyl-molding process has been applied to a new line of current transformers, developed for indoor and outdoor application. The line of 600-v transformers can be used on single-phase and on polyphase circuits. These units were designed to reduce customers' stock requirements and help cut inventory costs. The molded insulation permits compact designs meeting standard mounting dimensions for indoor applications, and is completely waterproof for outdoor service. *General Electric Co.*

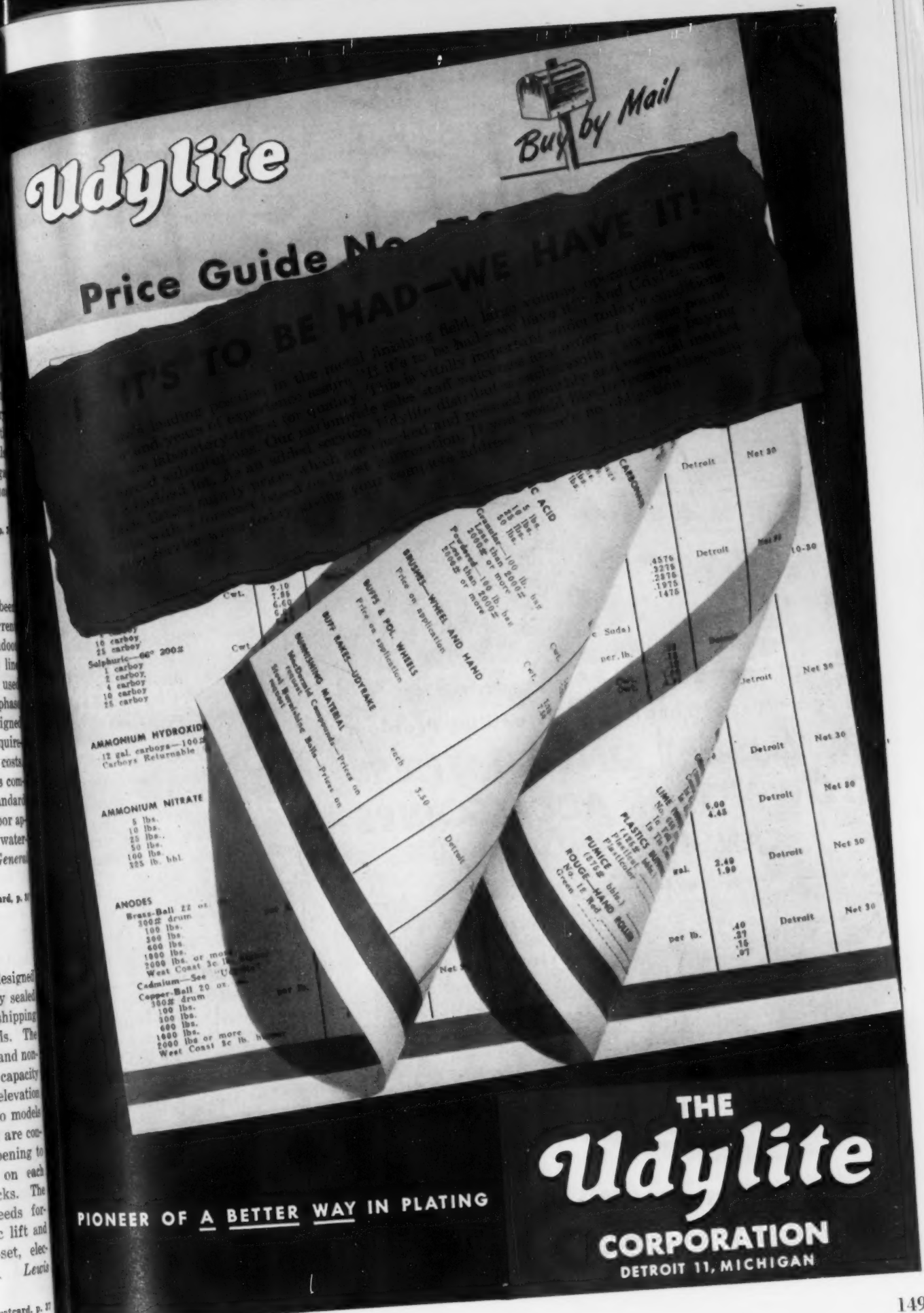
For more data insert No. 15 on postcard, p. 1

Tote bin stacker

A Jackstacker has been designed to handle tote bins, a tightly sealed container for handling, shipping and storing bulk materials. The truck is made in telescopic and non-telescopic models having capacity for 4000-lb loads. Fork elevation is 53 and 77-in. for the two models respectively. Lifting forks are constructed with an 11-in. opening to provide ample clearance on each side of tote bin tilt racks. The Jackstacker has two speeds forward and reverse, electric lift and lowering, and a spring-set, electrically released brake. *Lewis Shepard Products Inc.*

For more data insert No. 16 on postcard, p. 1

Turn Page



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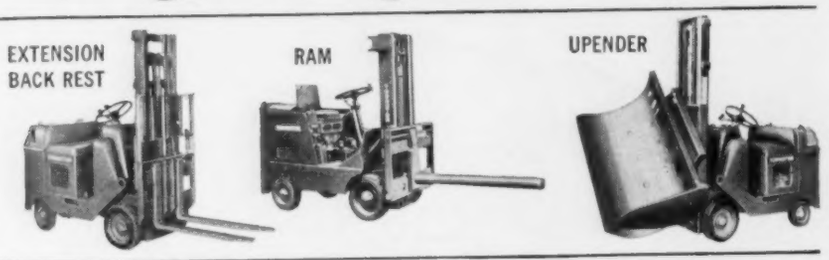

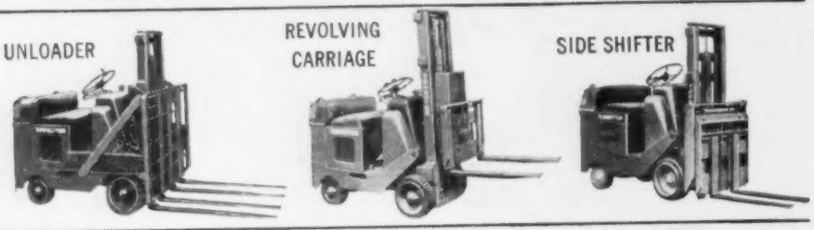

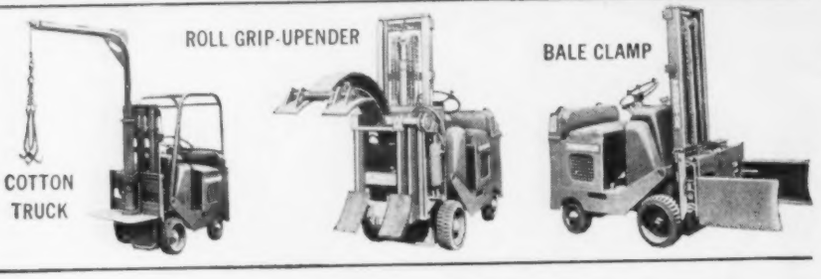

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WE'LL BET ONE OF THESE TOWMOTOR ACCESSORIES CAN HELP SOLVE IT!*

*IF NOT— TOWMOTOR SPECIAL ENGINEERING WILL DEVELOP THE ANSWER!

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Send to Towmotor Corporation, Div. 15, 1226 E. 152nd St., Cleveland 10, Ohio, for free folders describing the 14 Standard Towmotor Accessories, and Towmotor's Special Engineering devices.

HOW MANY PEOPLE HAVE YOU TALKED TO ABOUT AMERICANISM TODAY?

Neox coated gloves

A new rubber glove coated wi Neox for plating room use has t following advantages: The Ne coating is chemically welded strong fabric; seams are tight a safe against harmful fluids. wider, curved thumb span allow freer thumb and finger action, a curved fingers, made by a speci molding process, provide norm hand shape. Gloves have knit wri or gauntlet styles. They are lig and rugged and reasonably price *Hanson-Van Winkle-Munning Co.*

For more data insert No. 17 on postcard, p.

Internal pipe wrench

An internal pipe wrench and eas out can operate under circum stances where an outside wrenc is useless. By gripping the pip solidly on the inside it operate without restrictions encountere with a normal wrench. It allow either the installation or remova of short nipples, without damag to threads, removal of broken pip from couplings, etc. Five size and an adapter are packaged in plastic case or may be purchase individually. They operate with ½-in. drive ratchet handle, a ½ i flex handle, open end wrenches, o others in emergency. Wrench size run from ¼ to 1 in. *Clark Bro Mfg. Co.*

For more data insert No. 18 on postcard, p.

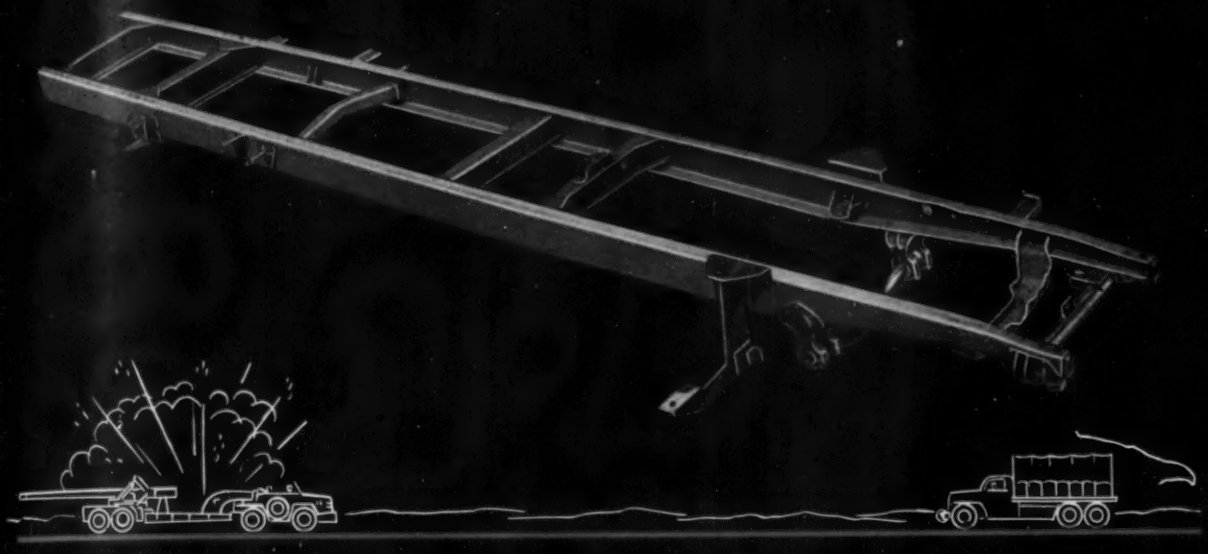
Flow meter

Fast and accurate response over a entire range and low initial co and maintenance are features of new flow meter. Advantages includ an evenly graduated meter scal and electronic integration. It i available either as a mechanica flow meter with integral recorder or as an electrical transmitter t be used with a Brown inductance bridge receiver. The new meter i the differential type, readily in stalled on a flow line. *Minneapolis Honeywell Regulator Co., Brown Instruments Div.*

For more data insert No. 19 on postcard, p.

Turn Page

Backbone for a Workhorse....



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Pay Load is the big word for both military and civilian vehicles. There's just one reason for the current shift to high tensile - low alloy steel frames for military trucks and buses.

This high strength strip permits lighter sections and with the same power unit increases Pay Load. That means more crew, or more ammunition, or more food, or more of whatever the Pay Load may be.

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FOR UNBALANCED LOADS

FORMED POCKETS PREVENT SLIPPAGE

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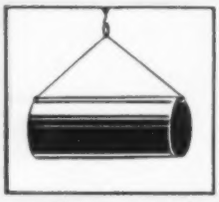
a New Idea!

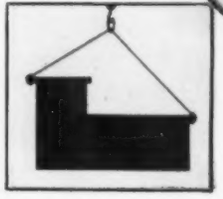
Now any load can be lifted the easiest way it can be picked up. And perfect balance is maintained every time.

Sling hooks are attached to load, saddle moved to correct position along chain's links which fit in pockets of the ACCO SLING CHAIN ADJUSTER. Then load is ready for lifting. Twisting or spiking of chain is unnecessary. Made in sizes for ½", ⅝", ¾", and ⅞" chain.



Adds greater safety on level lifts

Prevents slippage on angle lifts



Provides control of unbalanced lifts

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new equipment

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Unit dust controller

Effective dust control in limited and remote areas without benefit of a central dust control system is possible with a new unit dust controller, that incorporates the Day dual-clone dust separator and exhauster. Air-dust separation takes place by a two-stage action utilizing internal skimmers. The dust-laden air enters at the side of the unit and spirals smoothly down to the cone outlet. As the cleaned air spirals up through the internal skimmer stack, most extra fine dust particles, carried upward with the outgoing air, are concentrated by the tapered stack. Here they are skimmed off and returned to the dust outlet. *Day Co.*

For more data insert No. 20 on postcard, p.

Conveyer flow diverter

A Flow Diverter connects at any point on a permanent line of Rapid-Wheel gravity conveyer to move cartons in and out of storage bays without manual handling. Temporary spur lines can be set up quickly and easily on either side of a main line with this new attachment. The Flow Diverter kit is made up of a connecting yoke fastened to a 3-ft section of aluminum Rapid-Wheel; and a slotted aluminum diverter plate that has conveyer wheels projecting slightly above the surface. An adjustable curved aluminum guard rail also is included in the kit. *Rapids-Standard Co.*

For more data insert No. 21 on postcard, p.

Turn Page

IF YOU WANT THE ANSWER... TO ALUMINUM EXTRUSIONS!

You'll find it in this *NEW* W-S Bulletin 340-A, just coming off press. Write for your copy . . . Today!

This booklet not only illustrates the complete-line of W-S Extrusion Presses, including capacities, but, it also shows how production can be improved . . . increased. You can produce the extrusions you want —when you want them, at greatly reduced cost, and in these days of material shortages you won't have to carry expensive slow moving inventory.

Read about the *fast die-change* which permits one-man set-up and die-change. Read about the—Remote —push button automatic cycle controls featuring faster cycles of production—it gives you continuous operation without costly cycle delays.

This booklet shows you how others are extruding light metals and non-ferrous shapes—fast—profitably. It tells you why each and every individual W-S Machine is a complete "packaged" extrusion plant. Write for your copy . . . today, to Watson-Stillman, the "Headquarters" for Extrusion Presses.

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Pittsburgh 19, Pa.....Stanley Berg & Co.
Portland, Ore. ....Machinery & Tool Supply Co.
Rochester 12, N. Y.....Watson-Stillman Co.
San Francisco 7, Cal...Schollenbach Mach. Tool Co.
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Designers and manufacturers of toys and hardware specialties know that product failure is often due to faulty fasteners. The strength, economy and simplicity of parts like this make their use a "natural." We have the capacity to meet volume demands for related bent rod products, accurately held to close tolerances. Your product will benefit from our "know-how."

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new equipment

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Flexible metallic tubing

Sealflex metallic tubing is tension wound in such a way as to completely seal itself to carry oil, coolants, solvents without leaking. It will bend to any position and will stay put without support. In fact, it is stated the more you bend it the tighter the seal. The tubing is available in five sizes, with male or female couplings, nozzles, stopcocks and unions or fitted to customers specifications. *Vermont Flexible Tubing Co.*

For more data insert No. 22 on postcard, p. 37

Low-cost door fastener

Designed for fast, easy application to sheet metal doors and panels, a new Southco door latch consists of two brightly plated parts that fit together through a single hole drilled in the door panel. Installation is completed in a matter of seconds by twisting or flattening two prongs that join the handle and pawl; no rivets, bolts or welds are needed. *Southco Div. South Chester Corp.*

For more data insert No. 23 on postcard, p. 37

Emulsion cleaner

Super-Mul is a high strength, active solvent emulsion cleaner designed for the removal of industrial soils in spray washing machines. It cleans thoroughly, rinses freely, resists hard water, does not sludge out even with heavy soil loads. *DuBois Co.*

For more data insert No. 24 on postcard, p. 37

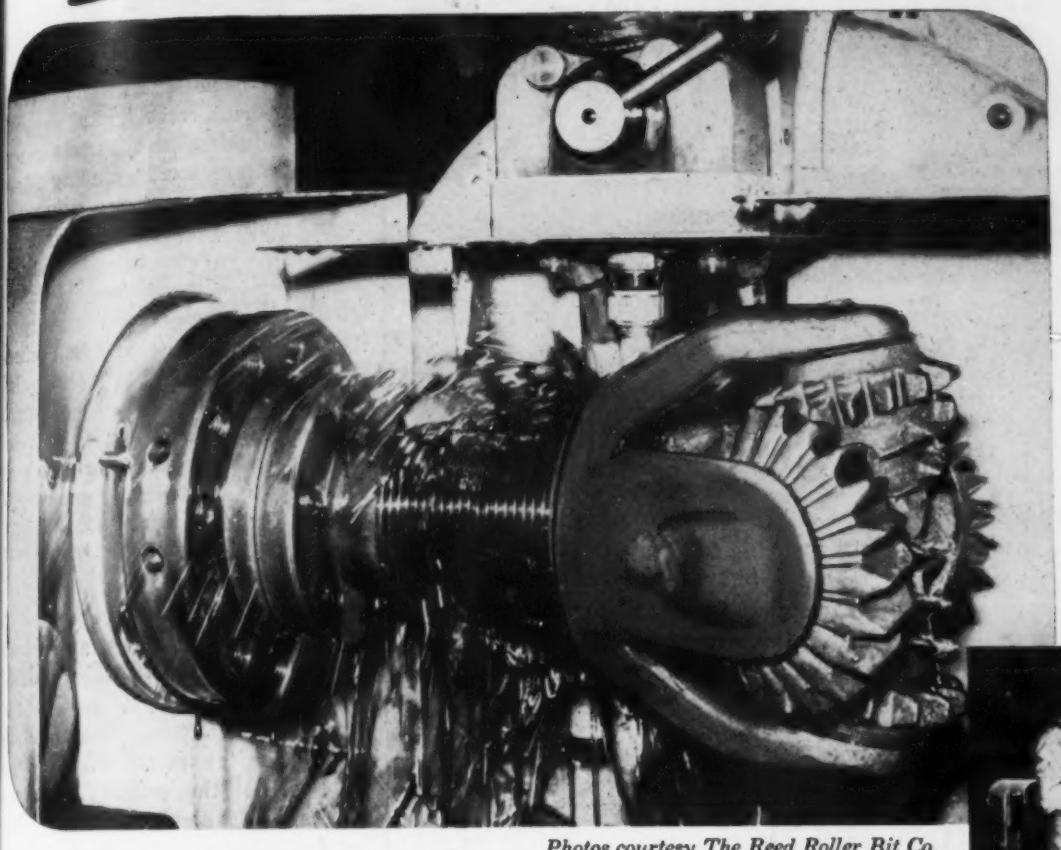
Metal shop boxes

New metal shop boxes are designed to insure quick and safe handling of materials during shop production operations. Drop handles and stacking features allow the boxes to be piled and stored in a minimum of space. Eight standard sizes are available with choice of two weights of material—16 and 18 gage and in sizes up to 22 in. long x 12 in. wide x 8 in. high. Boxes are rugged all-welded construction. *Platt & Labonia Mfg. Co.*

For more data insert No. 25 on postcard, p. 37

Turn Page

FACTS on improving production!



Photos courtesy The Reed Roller Bit Co.

4 inch diameter, 4 pitch API Threads ground from the solid in one pass of the wheel

The Reed Roller Bit Company's first concern is to maintain the highest possible quality in their products. They place special emphasis upon the development of improved manufacturing methods. A notable instance is their increased use of Jones & Lamson Automatic Thread Grinders.

These machines, in the skilled hands of Reed men trained in their operation, are helping to turn out better products for the drilling industry.

In addition to better quality threads and more uniform finish J&L Automatic Thread Grinders:

reduce handling costs
eliminate costly rethreading after heat treatment
eliminate expensive retooling when specifications change
reduce the cost of gage maintenance

Now, more than ever, the most efficient machines and methods are needed to make the most of your available manpower and material. Jones & Lamson engineers are available to help you with your turning, threading and inspection problems. Write *today* to Department 710.

Turret Lathes—Fay Automatic Lathes—Thread Grinders—Optical Comparators—Threading Dies

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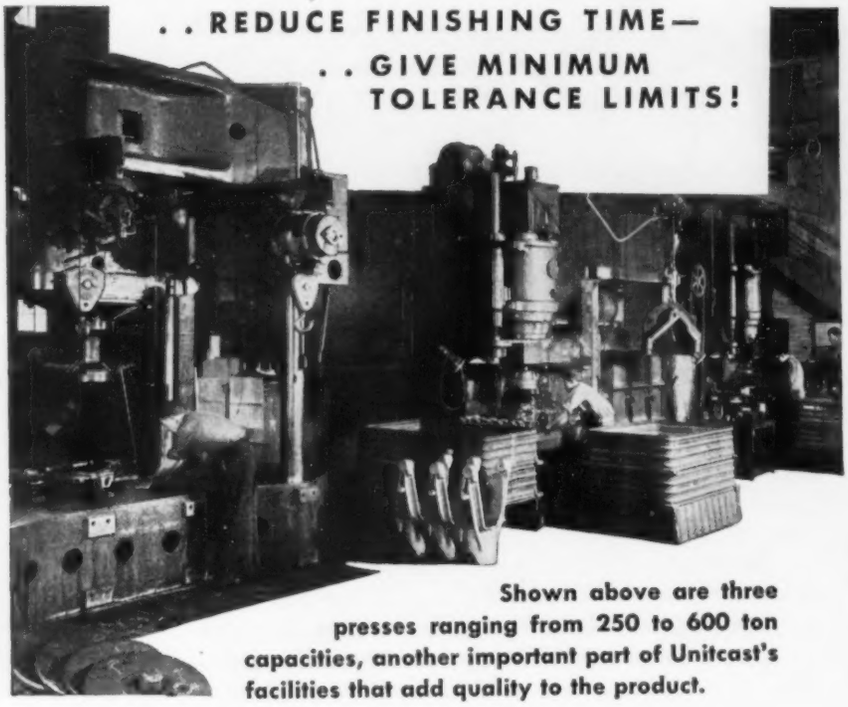
. . REDUCE FINISHING TIME—
. . GIVE MINIMUM TOLERANCE LIMITS!



Shown above are three presses ranging from 250 to 600 ton capacities, another important part of Unitcast's facilities that add quality to the product.

- Do your castings assemble freely and within tolerance limits?
- Do your castings fit machining fixtures properly, consistently?
- Are your finish allowances held to a minimum?

INTERCHANGEABILITY has long been recognized as the forerunner of mass production. Unitcast daily production is held to the specified dimensional tolerances, assuring you this very important advantage.

UNITCAST ENGINEERS CONTINUE TO BE AT YOUR SERVICE

UNITCAST
Corporation
QUALITY STEEL CASTINGS

Give us a chance to offer a "cast steel" answer for your parts problem. Our suggestions while your product is in the design stage will pay continuous dividends. Write or call today. Unitcast Corporation, Steel Casting Division, Toledo 9, Ohio. *In Canada:* Canadian-Unitcast Steel, Ltd., Sherbrooke, Quebec.

UNITCASTINGS ARE FOUNDRY ENGINEERED

new equipment

Continued

Air grinder

An added safety device on a new air grinder prevents overspeed operation and possible accidents. The tool has special applications in foundries, steel mills, general manufacturing and metalworking plants where hand grinding is required for snagging, trimming, smoothing, etc. A motor governor maintains correct wheel speed. In case motor overspeeds a safety coupling automatically uncouples the arbor and the grinding wheel from the motor. The grinder also has a multiple exhaust system. It is available for 8, 6, or 5-in. wheels running at motor speeds of 3100, 4100, and 4500 rpm, respectively. *Ingersoll-Rand Co.*

For more data insert No. 26 on postcard, p. 37

High lift electric trucks

For materials handling tasks where heavy loads must be raised a number of feet as well as moved, four new Hi-Lift electric trucks retain the basic characteristics of the Power Ox: the walking operator; electric lift and travel; and convenient finger tip control of all movements. Compactness and short turning radius give easy manuverability in close quarters. The trucks are designed to minimize physical effort, and to multiply the amount of material one man can move. The Hi-Lift trucks fit into the trend toward greater use of overhead space. *Barrett-Cravens Co.*

For more data insert No. 27 on postcard, p. 37

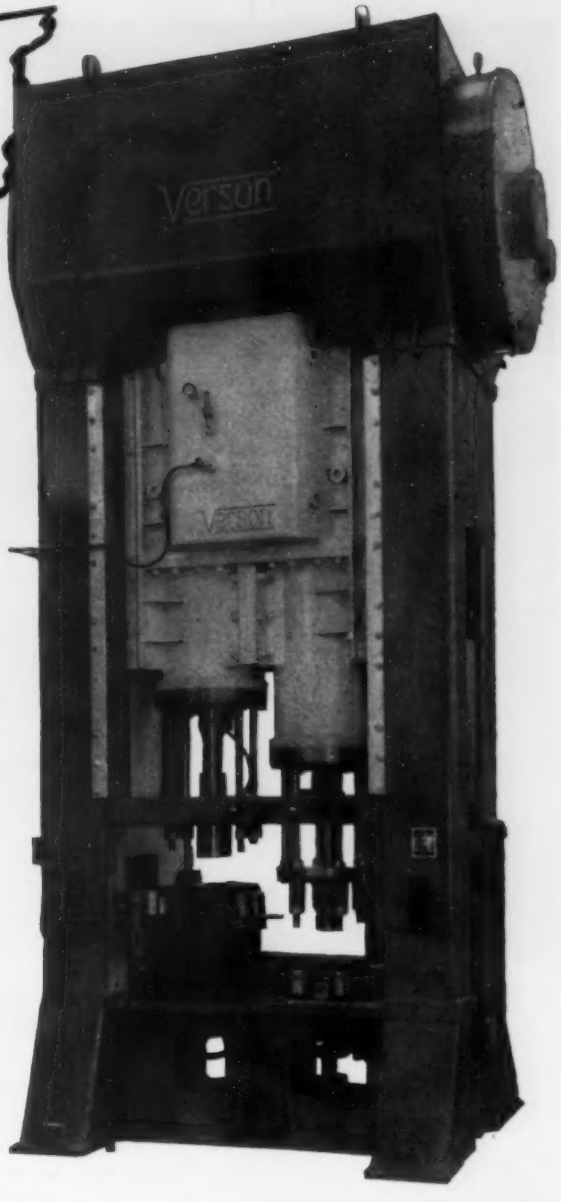
Dry-type transformers

A new line of general-purpose, dry-type transformers feature Class B insulation. For single-phase, 60-cycle operation, the new design provides smaller transformers at an average weight reduction of 30 pct throughout the line, and in some instances are said to weigh less than half as much as the units they replace. Certain ratings are available immediately; the ultimate line will consist of about 50 models in ratings of 3 kva and upwards. *General Electric Co.*

For more data insert No. 28 on postcard, p. 37

Resume Your Reading on Page 41

Can you match these production figures?

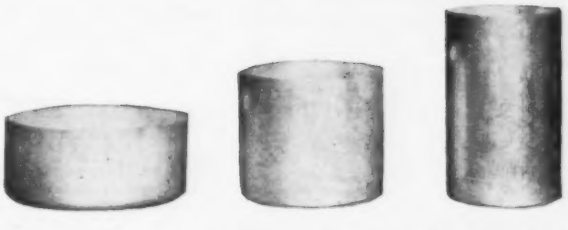


THIS TRADE Verson MARK AUTOMATIC TWO STAGE THREE OPERATION DRAWING PRESS produces over 1200 shells per hour

Typical of how Verson presses are advancing the efficiency of press forming of metals is the automatic two stage three operation drawing press illustrated above. 4½" I.D. x 7¼" deep shells are drawn at the rate of 1200 per hour! A completed shell is discharged at each stroke.

Presses such as this are typical of the many unusual machines being produced by Verson. But whether your job is unusual or conventional, it will be of interest to you to learn how Verson's extensive experience and know-how as a manufacturer of better presses for most jobs can help you.

Whatever your press requirements, whether they call for a single machine or a complete tool-up, call on Verson.



At the right is the finished shell after the final drawing and setting operation. Drawn from 21 ga. stock, the dimensions are 4½" I.D. x 7¼" deep.

Originators and Pioneers of Allsteel Stamping Press Construction

VERSON ALLSTEEL PRESS COMPANY

9314 South Kenwood Avenue, Chicago 19, Illinois — Holmes Street and Ledbetter Drive, Dallas 8, Texas

A VERSON PRESS FOR EVERY JOB FROM 60 TONS UP!

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING
DIE CUSHIONS • COMPRESSION AND TRANSFER MOLDING PRESSES

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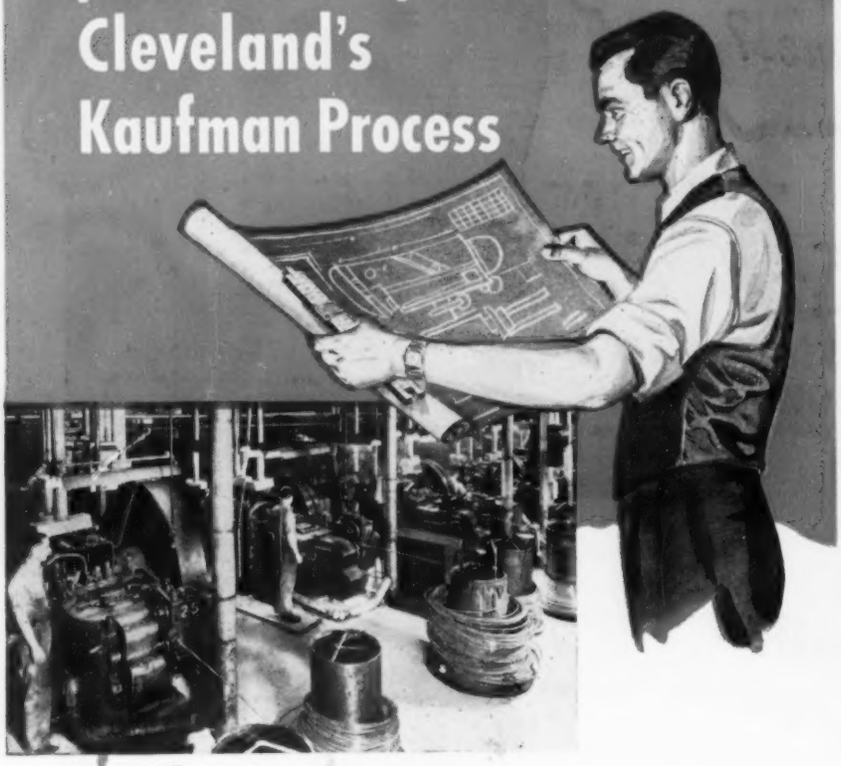
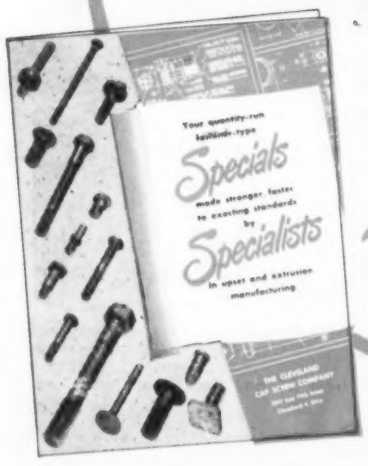
Simplify your special parts* production problem with Cleveland's Kaufman Process



Have your unusual *fastener-type parts made to your specifications by extrusion forging. Cleveland's Kaufman Process guarantees a tougher product, accurate in every dimensional detail—usually ready for use without machining. This method is faster, therefore more economical in most cases. The steel and heat treatment you specify are followed to "the letter".



Relieve your shop of this production problem. Have your quantity-run fastener-type specials made better and faster at Cleveland. Write for folder "Specials by Specialists."

THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street, Cleveland 4, Ohio

CLEVELAND *Top Quality* FASTENERS

originators of the Kaufman DOUBLE EXTRUSION Process

Ask your jobber for Cleveland Fasteners

publications

Continued from Page 3

Constant delivery pumps

Three new constant delivery axi piston pumps for pressures up t 3000 and 5000 psi are described i a new 4-p. bulletin. These units in corporate balanced flat valve simple, one-piece rolling pisto and reverse flow, high-pressure an supercharging pressure reli valves. *Oilgear Co.*

For free copy insert No. 34 on postcard, p. 2

Stainless used

A relatively new stainless ste Carpenter's No. 20, has succes fully been used in installations in volving corrosion agents such a sulfuric acid-contaminated terti ary amyl-phenol and amylene, hig concentrations of salt water, sul furic acid concentrations rangin from 35 to 65 pct, from boiling t 110°F. Additional information i given in a catalog. *MagniLast Div., Cook Electric Co.* A bookle on Carpenter Stainless No. 20 ca be obtained from *Carpenter Ste Co.*

For free copy insert No. 35 on postcard p. 2

Tool, die miller

A new catalog describes a popular 8-in. x 18-in. tool and die miller. This equipment is used for many types of toolmaking, including the accurate duplication of shaped con tours or reproduction of intricate detail. Reduces "bench time" re quired for many hand-finishing op erations and incorporates features recommended by tool and die shops. *Cincinnati Milling Machine Co.*

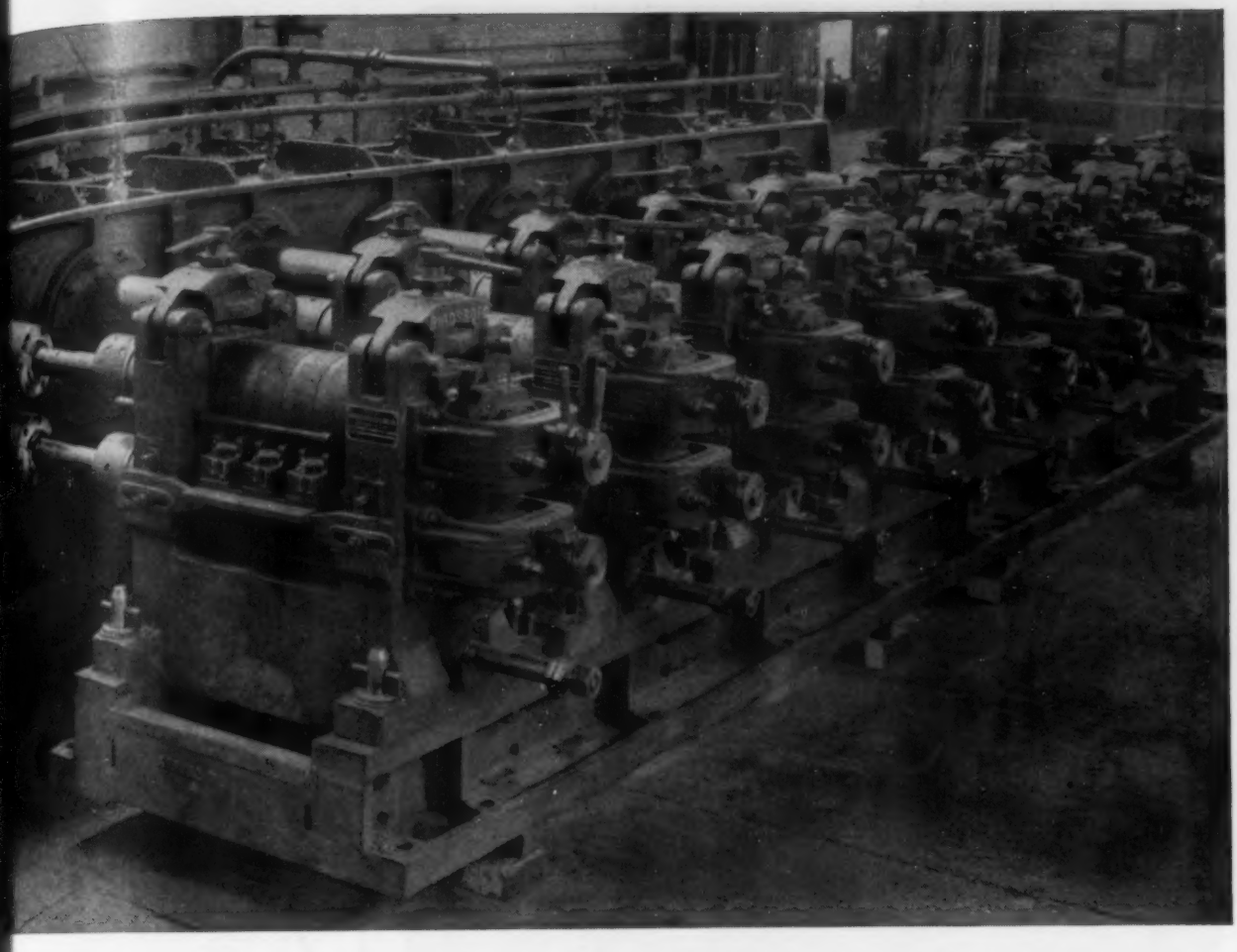
For free copy insert No. 36 on postcard p. 2

Ignition transformers

Models of the mid-point grounded design, equipped with built-in, two way self-shielding to suppress ra dio and television interference, are described and illustrated in a new 8-p. bulletin. Design and construc tion features of the transformers are discussed, complete with out line dimension drawings. The va riety of modifications available on standard models are also described. *General Electric.*

For free copy insert No. 37 on postcard p. 2

Turn to Page 162



MODERNIZE YOUR ROD MILL

for Increased Production... Lower Costs

Birdsboro's advanced engineering developed a new high speed finishing train, coilers and conveyors to modernize an existing mill. The eight stand finishing train is shown above at shop assembly.

If your production is lagging — or you find operating and maintenance costs are top heavy, call on Birdsboro. We are well equipped and have the engineering skill to modernize existing equipment—or replace it with the most up-to-date, efficient steel mill machinery.

BIRDSBORO

STEEL FOUNDRY & MACHINE CO.

Birdsboro, Penna.

Offices in BIRDSBORO, PA. *and* PITTSBURGH, PA.

STEEL MILL MACHINERY

Designers and Builders of:

Steel Mill Machinery • Crushing Machinery • Rolls

Hydraulic Presses • Special Machinery • Steel Castings

M 21-51

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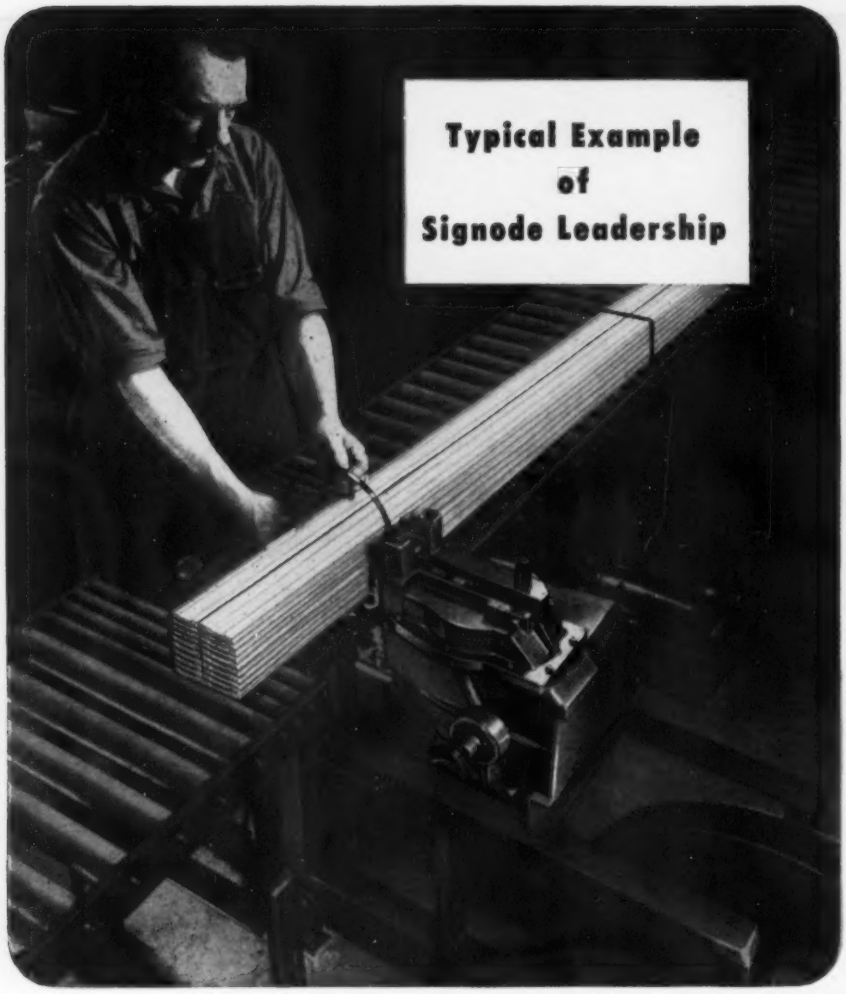


AUTOMATIC POWER STRAPPING!

If you have never seen a Signode Power Strapping Machine in action, this may seem hard to believe!

This mechanical device . . . with but the slightest guidance . . . draws steel strapping from a reel, loops it completely around a package or bundle, brings it to just the right tension, and then seals and severs the strap . . . at speeds up to 500 completed operations per hour . . . on such widely varying products as cartons of cigarettes and coils of wire.

Developed to meet the needs of mass production shippers, the Signode Power Strapping Machine, in one or another of its variations, has opened up a whole new avenue of profit possibilities for manufacturers of millwork, flooring, steel, canned food, plastic sheeting, automotive parts and scores of other products. It is one of the more recent, in a long list of contributions, which Signode has made to better packaging and shipping.

If you are engaged in defense or essential civilian production, we'd like to tell you more about Signode steel strapping, strapping tools and methods. Write . . .

SIGNODE STEEL STRAPPING COMPANY
2623 NORTH WESTERN AVENUE CHICAGO 47, ILLINOIS
this seal means security in shipping

Offices Coast to Coast
In Canada: Canadian Steel Strapping Co., Ltd.
Foreign Subsidiaries and Distributors World Wide

publications

Continued from Page 1

Tool catalog

A completely new 122-p. publi tion lists sockets, extensions, ada ers and universal wrenches. Il trations, dimensional drawings a complete specifications are inclu on more than 5000 tools. *Apex M chine & Tool Co.*

For free copy insert No. 38 on postcard p.

Floor and roof resurfacer

Folder describes preparations to used on floors, walls and other m sonry surfaces to prevent wa seepage, "dusting" of concrete a to repair breaks, holes and ru Other compounds are discus that prevent drying out of ro seal leaks and which can be used cover worn spots or a whole ro Details on concrete for flooring a wood preservatives included. *Ste hard Co.*

For free copy insert No. 39 on postcard p.

Induction heating, melting

A chart to aid in the selection heating and melting equipment f various types of processes and table giving heating and melti speeds is included in a new bul tin. Illustrations of typical appli tions and equipment, together wi case histories of actual instal tions, are also included. *Ajax El trothermic Corp.*

For free copy insert No. 40 on postcard, p.

Atomizing burner

Various models of a high-pressu atomizing oil burner that uses a or steam at pressures ranging fro 30 to 150 psi are pictured and d scribed in an 8-p. booklet. Vent ports in this device constrict t flow of air or steam, producin high velocity at the point whe mixture with fuel takes place. Fe tures such as this result in insta taneous lighting, a cleaner, hott flame, wide range of capacity, ec nomical oil consumption. Tabl giving gallons-per-hour ratings the line of burners made are in cluded. *Hauck Mfg. Co.*

For free copy insert No. 41 on postcard, p.

Resume Your Reading on Page 3

IRON AGE *markets and prices*

market briefs and bulletins

in't cricket—British iron and steel prices were in-sed as much as 25 pct, in one instance. It gave steel stry owners who were nationalized out of the pro-tion scene an opportunity for well-founded gloating. Laborite government blamed the increases on rising s of raw materials. Prices were shoved up as much $16.80 a ton. Recent increases in coal prices and rail ght rates also were up for a share of the price boost e. Both rails and coal are nationalized. Some say l increases may be a way of distributing losses of ionalized industries.

teel shipments—The steel industry shipped 15 pct 42,000 tons) more steel during the first half of this r than it did during the same period of last year, ording to data reported to American Iron & Steel titute. Steel's number one customers were warehouses ch got 18.1 pct of total. Auto people got 17.8 pct pared to 20.9 pct during same period last year. Ship-nts to railroads rose 56 pct. Direct military users got times as much.

ll's well?—Conservation measures which resulted larger second quarter stocks of bismuth are about to dividends. Beginning Sept. 1, National Production thority will permit consumers to accept deliveries of pct of the base period—first half of 1950. Restric-s had limited deliveries to 60 pct of the base.

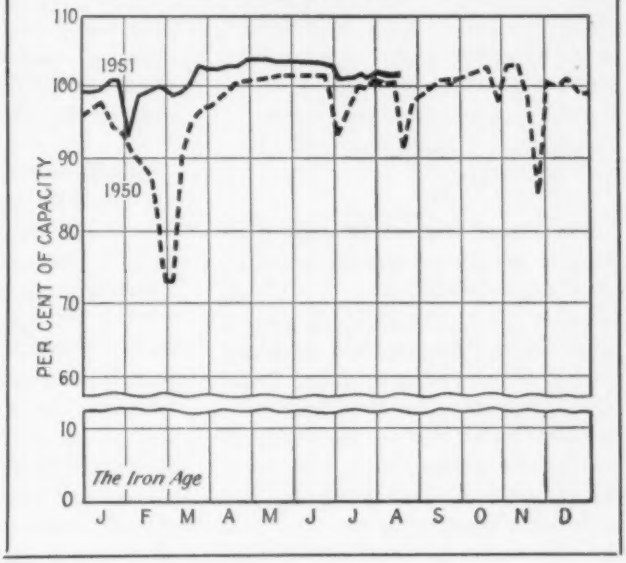
nflation—Since the first of the year, authorized rail-d freight rate increases have added 65 to 85¢ to the t of producing a ton of steel. This includes the April grim boost and the latest increase scheduled to become ctive Aug. 28. The increased cost to steel consumers l total 70 to 90¢ per ton.

ig furnace—Weirton Steel Co. tapped the first heat steel Tuesday night from the second 550-ton open-rth furnace to be brought into production at the plant. eral other furnaces of equal size are producing at the eat Lakes Steel Corp., another National Steel Corp. sidiary. These furnaces are the largest in the ustry.

jet ceramics—Scarce strategic alloys will be conserved under a new program of using ceramic coatings of exhaust systems in the aircraft engine field. Ryan Aeronautical Co., San Diego, announced the nation's first volume production contracts. About 600 sets for Pratt & Whitney engines for transport planes will be ceramic coated. Boeing Airplane Co., Seattle, has ordered ceramic-coated Ryan exhaust assemblies for its B-50 bombers and C-97 Stratofreighters. General Electric has given Ryan experimental orders for ceramic coating in J-47 (jet) engines.

structurals—Industrial expansion projects are keeping terrific pressure on structural steel suppliers. Everybody thinks his plant is most essential and that it should be built first. Result: Industrial expansion which would have taken place over a much longer period is being crammed into the next couple of years. Still unanswered is the question, where do we go from there?

Steel Operations †



District Operating Rates—Per Cent of Capacity †

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
8-5	100.0*	105.0	100.0*	101.0	104.0	104.0	99.0	106.0	105.0	111.0	93.5	90.5	106.0	101.5
8-12	101.0	104.5	101.0	101.0	105.0	104.0	100.0	106.0	105.0	96.0	101.0	91.5	111.0	101.5

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.
* Revised.

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nonferrous metals

outlook and market activiti

NONFERROUS METAL PRICES

	Aug. 8	Aug. 9	Aug. 10	Aug. 11	Aug. 13	Aug. 14
Copper, electro, Conn. ...	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered ..	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.03	$1.03	$1.03	....	$1.03	$1.03*
Zinc, East St. Louis	17.50	17.50	17.50	17.50	17.50	17.50
Lead, St. Louis	16.80	16.80	16.80	16.80	16.80	16.80

*Tentative

Note: Quotations are going prices.

by R.Hatsche

Pay Up, or Else—Next Monday 100,000 workers say they are going to walk out on all the major copper producers in the nation unless satisfactory terms are reached in discussions between the dozen unions involved, the copper companies and government mediators. Sure, the old contracts have expired and there's no doubt that the workers have some good arguments in the light of higher consumer costs. But threatening to cut off some 95 pct of the country's copper production in these times of shortage on top of emergency is little short of highway robbery.

Aluminum Output Steady—The Bureau of Mines reports primary aluminum production of 67,454 tons for the month of June, almost duplicating the average monthly output for the year to date. Total production for the first half was 403,592 tons, which, if equalled during the second half, will mean the second largest year in the aluminum industry's history—and its expansion is just getting up steam.

Expansion Notes—Dept. of the Interior has recommended a certificate of approval to Aluminum Co. of America for construction of its new aluminum plant in Milam County, Tex. Capacity planned is 85,000 tons of aluminum and 180,000 tons of alumina per year from bauxite originating in either or both South America or Arkansas. (See THE IRON AGE, Aug. 2, p. 104.)

Harvey Machine Co. is still hoping to get into the aluminum reduction picture. Last week, company officials told the Seattle Chamber of Commerce that it would soon make a decision on the site for its proposed $12 million alumina plant. The Puget Sound area is currently being favored with six cities in the Northwest bidding for the project.

Smelters Cutting Operations—On the other hand, the outlook for secondary aluminum is not so bright. Reports are heard that secondary aluminum smelters are cutting back operations anywhere up to 100 pct. At last week's Aluminum Research Institute meeting in Chicago, all ingot makers stated that they planned eventual curtailments in production if the situation did not alter.

The cause, naturally, is the shortage of raw material; in this case it is scrap metal. Scrap dealers feel that one of the main causes for the shortage is the extent to which Office of Price Stabilization rolled back aluminum scrap prices. They point out that other metal prices were not cut as sharply and they also cite other differences between the regulations g erning aluminum and those co ing the other metals.

Scrap Situation—Trade gri at the aluminum regulati other than that prices are too l are that dealer to dealer sales impossible and that shipme must be made within 3 days. T causes serious inconvenien when a dealer could more ef ently schedule shipments hims

Mercury Still Slipping—M cury prices have declined furt until they now stand at $19 $202 per 75-lb flask, depending quantity. Prices may come d further, but the market is a cry from the $70 price before Korean war started. Incidenta domestic mercury has been moved from the price control while foreign mercury is still cluded in Ceiling Price Regu tion 31. (See p. 126.)

Bolivians Say No—The Boliv tin producers have unanimou rejected the U. S. offer of $ per lb of tin for anything lon than 1 month. Reconstruct Finance Corp.'s 3-month o would really mean 6 months' o put since they have a 3-mo stockpile accumulated, the B livians claim.

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Steel: 0.188 in., 2S, 3S, 30.1¢; 4S, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 61S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 41.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 35.1¢; 4S, 61S-O, 37.1¢; 52S, 39.3¢; 24S-O, 61S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 61S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 34.7¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 28, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢; 12.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 85¢.

Screw Machine Stock: Rounds, 11S-T3, ½ to 11/32 in., 53.5¢ to 42¢; ⅝ to 1½ in., 41.5¢ to 19¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 over by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 35¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 34¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 34¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63-S-T-5, OD in. 1 to 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage 0.24 x 28 in., 72 in., $1.379; 96 in, $1.839; 120 in., $2.299; 144 in., $2.759. Coiled Sheet: 0.019 in. x 28 in., 32¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in. 67¢; ⅛ in. 67¢; B & S Gage 10, 68¢; 12, 72¢; 14, 78¢; 16, 85¢; 18, 93¢; 20, $1.05; 22, $1.27; 24, $1.67. Specification grade higher. Base: 1,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base Up to ⅝ in. diam, 10,000 lb; ¾ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢ 0.22 to 0.25 lb, 5.9 in., 59.3¢ 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 5 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thicknesses, outside diam, in., 0.049 to 0.057, ¼ in. 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 76¢; 1 to 2 in., 76¢; 0.165 to $0.219, ⅝ to 1, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 4 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, $15; Plate, HR, $12; Bar, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b.. mill)

	"A" Nickel	Monel
Sheets, cold rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Pipe and blocks	..	53½

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	40.18	....	39.78
Copper, h-r	....	36.03	....
Copper, drawn	....	37.28	....
Yellow brass	38.47	38.16	....
Yellow brass	37.28	36.97	....
Red brass	38.86	38.55	....
Naval brass	42.27	36.33	37.59
Leaded brass	....	....	36.86
Com'l bronze	40.18	39.87	....
Mang. bronze	45.77	39.80	41.36
Tobos. bronze	59.42	59.67	....
Muntz metal	40.28	35.84	37.09
Nickel silver, 10 pct	48.26	50.59	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	42.00
Beryllium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.00
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.55
Cobalt, 97-99% (per lb)	$2.10 to $2.17
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$200
Lead, St. Louis	16.80
Lead, New York	17.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb	24.50
Magnesium, sticks, 100 to 500 lb	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$198-$202
Nickel electro, f.o.b. N.Y. warehouse	59.58
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	90.16
Tin, New York	$1.03
Titanium, sponge	$5.00
Zinc, East St. Louis	17.50
Zinc, New York	18.25
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	29.00
No. 120	28.50
No. 123	28.00
80-10-10 ingot	
No. 305	34.00
No. 315	32.00
88-10-2 ingot	
No. 210	40.00
No. 215	38.50
No. 245	37.00
Yellow ingot	
No. 405	25.50
Manganese bronze	
No. 421	32.75

Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	21.2
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy	20.8
ASX-679	20.5

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	18.00
Grade 2—92-95%	17.75
Grade 3—90-92%	17.25
Grade 4—85-90%	16.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39½
Electrodeposited	33⅝
Rolled, oval, straight, delivered	38⅞
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	26½
Ball anodes	25⅛
Nickel 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.80
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz	67¾
Sodium cyanide, 96 pct domestic 200 lb drums	19.35
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20¾
Yellow Brass	19½	17⅞
Red brass	20½	19⅝
Comm. bronze	20½	19⅝
Mang. bronze	18½	17⅞
Brass rod ends	18⅞	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	16.50

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	19.50
No. 1 comp. turnings	19.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	15.50
Aluminum	
Mixed old cast	9.75
Mixed new clips	11.00
Mixed turnings, dry	9.50
Pots and pans	9.25

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18¾—19¼
No. 2 heavy copper and wire	17¼—17¾
Light copper	16 —16½
New type shell cuttings	16 —16½
Auto radiators (unsweated)	14¼—14¾
No. 1 composition	18 —18½
No. 1 composition turnings	17¾—18
Unlined red car boxes	16¾—17¼
Cocks and faucets	15½—16
Mixed heavy yellow brass	12 —12½
Old rolled brass	15 —15½
Brass pipe	16 —16½
New soft brass clippings	16 —16½
Brass rod ends	16 —18
No. 1 brass rod turnings	15 —17

Aluminum

Alum. pistons and struts	6½— 7½
Aluminum crankcases	7½— 8
2S aluminum clippings	10½
Old sheet and utensils	7½— 8
Borings and turnings	5 — 6
Misc. cast aluminum	7½— 8
Dural clips (24S)	10 —11

Zinc

New zinc clippings	12¼—12½
Old zinc	9 — 9¼
Zinc routings	5¾— 6
Old die cast scrap	5¾— 6

Nickel and Monel

Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13

Lead

Soft scrap, lead	14 —14½
Battery plates (dry)	9½—10

Magnesium

Segregated solids	15 —16
Castings	14 —15

Miscellaneous

Block tin	85 —90
No. 1 pewter	60 —65
No. 1 auto babbitt	48 —50
Mixed common babbitt	16¼—16½
Solder joints	23 —24
Siphon tops	48 —50
Small foundry type	20½—21
Monotype	18¼—18⅝
Lino. and stereotype	17½—18
Electrotype	15 —15½
Hand picked type shells	8¾— 9
Lino. and stereo. dross	8¾— 9
Electro. dross	5 — 5¼

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SCRAP *iron and steel*

markets
prices
trends

Steel industry forms scrap salvage committee . . . The idea will have some roadblocks . . . But it must be done.

The steel industry last week moved to put a stiffer backbone and discipline into industrial scrap drives that have been popping off haphazardly across the nation. Results so far have not been too heartening. Manufacturers aren't under the goal of patriotism to dig deep for dormant heavy scrap.

Some in the scrap trade throw up roadblocks to phenomenal success of the scrap campaign. They point out that replacements for scrapped machinery are costly, even if available. They can say that manufacturers are still uncertain as to their defense roles and won't scrap old but possibly usable machinery.

The logical critics can say that World War II scrap collection drives taught industry a valuable lesson in scrap housekeeping and incidentally consumed much of what was available. All these objections may point out that the industry scrap drive will not be the salvation of the mills on scrap. That remains to be seen. But how successful the drive will be doesn't really matter. It must be done. The shortage of scrap could become very acute and any desperation measure to bring out, no matter how small, a tonnage of dormant scrap, will be valuable.

The main reliance for scrap will stay on the shoulders of the scrap trade. What scrap drives can uncover will be peanuts to what the scrap trade is bringing out now. The trade naturally dislikes a situation where steel mills go directly to producers for scrap. It can lead to bad habits if there is any bypassing of scrap men. This can be injurious to the tried and true system.

The Scrap Committee has offered assurances that scrap will go through normal channels—as it should. Scrap men should protect themselves by sitting in on local scrap drive committees. They have been invited to do so. Protection for the scrap trade should be ironclad.

PITTSBURGH — Steel producers are finding it impossible to build inventories beyond a certain point. Once stocks reach what might be termed "comfortable" by today's standards, their allocated scrap is cut back. One mill had been receiving about 20 pct of its requirements through allocations, but when its inventory grew "heavy", allocated material was reduced to about 3 pct of requirements. The mills take this philosophically, however, and see no reason to relax their efforts to obtain dealer scrap.

CHICAGO—Scrap flow in the Chicago district continues to decline somewhat but an end to the present downward trend is predicted by some observers within 30 to 60 days. Under allocations, shipments out of this area have now virtually vanished. There has been some improvement in the volume of turnings generated her. This trend is expected to continue as the defense program develops.

PHILADELPHIA—There is evidence of a further softening in cast grades of scrap in this district but a rumor of cupola cast being sold at $48, $1 under ceiling, went unconfirmed. This is a seasonal slump and nobody is particularly concerned about it, saying that the first cool spell will boost demand for cast scrap. New allocations are expected almost momentarily on steel grades. The scrap trade here is not so optimistic about bringing in large quantities of dormant scrap from industry. It is felt that plants got into good housecleaning habits during World War II.

NEW YORK—A new rash of allocations from this area broke out last week. One dealer reported that intake of scrap this month is not matching what it was in August. Cast remains on the weak side. Pace of the market is slower than it was in the past few months.

DETROIT—As anticipated, scrap generation has fallen off noticeably in Detroit during recent weeks. Unable to build up their inventory, local mills are definitely concerned about scrap availability during the winter months. Rumors persist that allocations will be ordered for Detroit scrap dealers but as yet no action has been taken. Widespread reports of upgrading seem to be fading out.

CLEVELAND—Mills here and throughout the area continue to operate on a day-to-day basis. Missing a scrap shipment today would mean a shutdown tomorrow in many cases. Rails and No. 1 grades are the most critical with virtually all openhearth grades on allocation. Wide interest has been shown in program to salvage streetcar tracks. Other cities have been sending engineers here to study prospects.

ST. LOUIS — The movement of scrap iron to the industrial district gains with the subsiding of the flood waters and the resumption of work by processing yards. But in sections not affected by floods, shipments are very light because of the heat and the need for farmers to work in their own fields. Because of the hot weather, August is usually a sluggish month. Because of allocations, steel mills are getting an ample supply of scrap. Foundry grades are dull, as foundries have comfortable inventories.

BIRMINGHAM — It is now a buyers' market in cast iron scrap in this district and dealers and brokers are finding it very difficult to sell. This is due partly to shutdown of two cast iron pipe companies as a result of strikes. The scrap steel market is still tight and shows no sign of loosening up.

CINCINNATI—Foundries here are only holding their own because of West Coast allocations. A few foundries are better off now than they have been in some time. Openhearth and electric furnace scrap grades are extremely short with much of this also on allocation. Here, and in most Ohio areas, inventories run little better than 3 or 4 days—and that is felt to be optimistic.

BOSTON—The scrap market here is quiet and shows little change except for a softening in cast grades. The trade is buzzing with talk about possible new waterfront prices. It is expected that Washington will establish new water carrier freight rates but there is only speculation on it and nobody knows whether the action will be a rollback or a rollforward.

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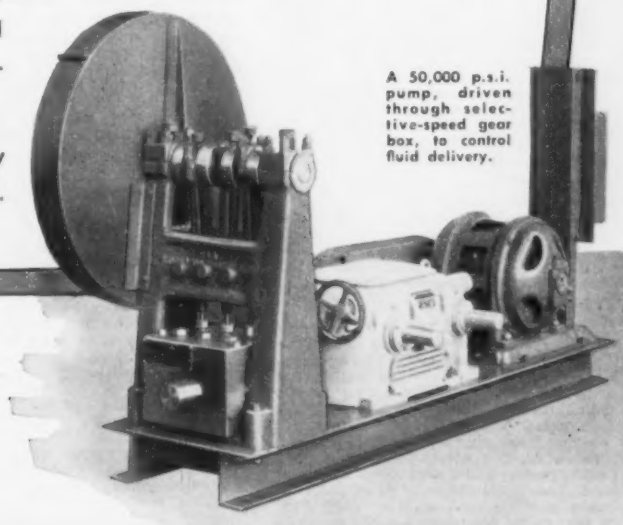

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Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, set by OPS, effective Feb. 7, 1951. Shipping point and delivered prices calculated as shown below)

Switching Charge (Dollars per gross ton) →		$0.99	.75	.83	.65	.75	.51	.75	.51	.61	.75	.70	.76	.83	.85	.26	1.34	.79	.50	.20	.52	.47	.51	.51	.51	.81	.98	.50	.78	.50	.43	.51	.33	.67	.68
Basing Points →		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Coatesville	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles, Pittsburg, Cal., Portland, Ore., San Francisco
GRADES	OPS No.																																		
No. 1 heavy melting	1	$44.00							$44.00					$43.00				$42.50						$42.00				$41.00	$41.15	$40.00	$39.50	$39.00		$38.00	$37.00	$38.00
No. 2 heavy melting	2	42.00							42.00					41.00				40.50						40.00				39.00	39.15	38.00	37.50	37.00		36.00	35.00	33.00
No. 1 busheling	3	44.00							44.00					43.00				42.50						42.00				41.00	41.15	40.00	39.50	39.00		38.00	37.00	36.00
No. 1 bundles	4	44.00							44.00					43.00				42.50						42.00				41.00	41.15	40.00	39.50	39.00		38.00	37.00	36.00
No. 2 bundles	5	41.00							41.00					40.00				39.50						39.00				38.00	38.15	37.00	36.50	36.00		35.00	34.00	32.00
Machine shop turnings	6	34.00							34.00					33.00				32.50						32.00				31.00	31.15	30.00	29.50	29.00		28.00	27.00	25.00
Mixed borings and turnings	7	38.00							38.00					37.00				36.50						36.00				35.00	35.15	34.00	33.50	33.00		32.00	31.00	29.00
Shoveling turnings	8	38.00							38.00					37.00				36.50						36.00				35.00	35.15	34.00	33.50	33.00		32.00	31.00	29.00
Cast iron borings	10	38.00							38.00					37.00				36.50						36.00				35.00	35.15	34.00	33.50	33.00		32.00	31.00	29.00
No. 1 chemical borings	26	41.00							41.00					40.00				39.50						39.00				38.00	38.15	37.00	36.50	36.00		35.00	34.00	32.00
Forge crops	11	51.50							51.50					50.50				50.00						49.50				48.50	48.65	47.50	47.00	46.50		45.50	44.50	42.00
Bar crops and plate	12	49.00							49.00					48.00				47.50						47.00				46.00	46.15	45.00	44.50	44.00		43.00	42.00	40.00
Punchings and plate	14	46.50							46.50					45.50				45.00						44.50				43.50	43.65	42.50	42.00	41.50		40.50	39.50	37.00
Electric furnace bundles	15	46.00							46.00					45.00				44.50						44.00				43.00	43.15	42.00	41.50	41.00		40.00	39.00	37.00
Cut struct., plate, 3 ft and less	16	47.00							47.00					46.00				45.50						45.00				44.00	44.15	43.00	42.50	42.00		41.00	40.00	38.00
Cut struct., plate, 2 ft and less	17	49.00							49.00					48.00				47.50						47.00				46.00	46.15	45.00	44.50	44.00		43.00	42.00	40.00
Cut struct., plate, 1 ft and less	18	50.00							50.00					49.00				48.50						48.00				47.00	47.15	46.00	45.50	45.00		44.00	43.00	41.00
Foundry steel, 2 ft and less	20	46.00							46.00					45.00				44.50						44.00				43.00	43.15	42.00	41.50	41.00		40.00	39.00	37.00
Foundry steel, 1 ft and less	21	48.00							48.00					47.00				46.50						46.00				45.00	45.15	44.00	43.50	43.00		42.00	41.00	39.00
Heavy trimmings	24	43.00							43.00					42.00				41.50						41.00				40.00	40.15	39.00	38.50	38.00		37.00	36.00	34.00
No. 1 RR heavy melting	RR 1	46.00							46.00					45.00				44.50						44.00				43.00	43.15	42.00	41.50	41.00		40.00	39.00	37.00
Scrap rails, random lengths	RR 14	48.00							48.00					47.00				46.50						46.00				45.00	45.15	44.00	43.50	43.00		42.00	41.00	39.00
Scrap rails, 3 ft and less	RR 16	51.00							51.00					50.00				49.50						49.00				48.00	48.15	47.00	46.50	46.00		45.00	44.00	42.00
Scrap rails, 2 ft and less	RR 17	52.00							52.00					51.00				50.50						50.00				49.00	49.15	48.00	47.50	47.00		46.00	45.00	43.00
Scrap rails, 18 in. and less	RR 18	54.00							54.00					53.00				52.50						52.00				51.00	51.15	50.00	49.50	49.00		48.00	47.00	45.00
Rerolling rails	RR 15	53.00							53.00					52.00				51.50						51.00				50.00	50.15	49.00	48.50	48.00		47.00	46.00	44.00
Uncut tires	RR 20	48.00							48.00					47.00				46.50						46.00				45.00	45.15	44.00	43.50	43.00		42.00	41.00	39.00
Cut tires	RR 21	51.00							51.00					50.00				49.50						49.00				48.00	48.15	47.00	46.50	46.00		45.00	44.00	42.00
Cut bolsters and side frames	RR 23	49.00							49.00					48.00				47.50						47.00				46.00	46.15	45.00	44.50	44.00		43.00	42.00	40.00
RR specialties	RR 24, 28, 29	51.00							51.00					50.00				49.50						49.00				48.00	48.15	47.00	46.50	46.00		45.00	44.00	42.00
Solid steel axles	RR 25	58.00							58.00					57.00				56.50						56.00				55.00	55.15	54.00	53.50	53.00		52.00	51.00	48.00
No. 3 steel wheels	RR 27	51.00							51.00					50.00				49.50						49.00				48.00	48.15	47.00	46.50	46.00		45.00	44.00	42.00

Cast Scrap

(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast	1	$49.00
Charging box cast	3	47.00
Heavy breakable cast.	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast.	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y. cast	11	52.00

Ceiling price of clean cast iron foundry runouts or prepared cupola drops is 75 pct of corresponding grade.

SWITCHING DISTRICTS—These basing points include the indicated switching districts: Pittsburgh; Bessemer, Homestead, Duquesne, Munhall. Cincinnati; Newport. St. Louis; Granite City, East St. Louis, Madison, and Federal, Ill. San Francisco; South San Francisco, Niles, Oakland. Claymont; Chester. Chicago; Gary.

SHIPPING POINT PRICES (Except RR scrap)—For shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is $1.25 per gross ton except: Memphis, 95¢; Great Lakes ports, $1.50, and New England ports, $1.75. Maximum shipping point price on No. 1 heavy melting steel in New York City is $36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Ceiling need not fall below $32 per gross ton for No. 1 heavy melting steel, with set differentials for other grades. Cast scrap shipping point prices are given in table.

DELIVERED PRICES (RR scrap)—Ceiling on-line price of a RR operating in a basing point is the top in the highest priced basing point in which the RR operates. For off-line prices, RR's not operating in basing point, non-operating RR's, and RR scrap sold by someone other than a RR see text of order, THE IRON AGE, Feb. 8, 1951, p. 137-C.

DELIVERED PRICES (Except RR scrap)—Ceiling is the shipping point price plus actual freight charge, tax included. Dock charges, where applicable, are as above.

UNPREPARED SCRAP—Ceiling price is $8 a ton less than prepared base grades (No. 1 heavy & No. 1 RR heavy). Scrap suitable for compressing into No. 1 bundles is $6 less than No. 1 bundles; suitable for compressing into No. 2 bundles, $8 less than No. 2 bundles. For cast material requiring special preparation, price is breakable cast less preparation costs.

COMMISSIONS—Brokers are permitted a maximum of $1 per gross ton commission which must be separate on the bill.

ALLOY PREMIUMS—These alloy extras are permitted: Nickel; $1.25 may be added to price of No. 1 heavy for each 0.25 pct nickel between 1 and 5.25 pct. **Molybdenum**; $2 may be added to price of No. 1 heavy for molybdenum over 0.15 pct, $3 for content over 0.65 pct. **Manganese**; $4 may be added to price of No. 1 heavy or No. 1 RR heavy for content over 10 pct if scrap is in sizes over 8 x 12 x 24 in., $14 if less than 8 x 12 x 24 in. Manganese premium applicable only if sold for electric furnace use or on NPA allocation. **Silicon**: electric furnace and foundry grade adjustments are not applicable if silicon content is between 0.5 and 1.75 pct. **Chromium**; $1 may be added if scrap conforms to SAE 52100 analysis. **Multiple Alloys**; if scrap contains two premium alloy elements, total premium may not exceed ceiling premium for any one contained alloy.

RESTRICTONS ON USE—Ceiling prices on some scrap items may fluctuate with use by consumers. If some scrap is purchased for its established specialized use, the ceiling price set in the order stands. But if some special grades are purchased for other uses, the ceiling price charge shall be the price of the scrap grade being substituted. For example, the price established for Grade 28 (wrought iron) may be charged only when sold to a producer of wrought iron. Otherwise the ceiling price shall not exceed the ceiling price for the corresponding grade of basic openhearth. Restrictions on use are placed on the following grades: Chemical borings, wrought iron and re-rolling rails, cupola cast, billet, bloom, and forge crops, Nos. 1 and 2 chemical borings. Ceiling prices on billet bloom and forge crops, alloy-free turnings, and heavy turnings may be charged only when shipped directly from industrial producer. NPA prohibits openhearth users from buying electric furnace grades, Nos. 11 through 18, foundry grades, Nos. 20 and 21 and cast grades, 1, 7, 9 and 11.

CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	$ 0.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	4.00
Crushing machine shop turnings	3.00
Bar crops and plate, cast steel, punchings and plate, cut structural and plate, 3 ft and under, foundry steel, 2 ft and under, wrought iron	10.00
Structural, plate scrap, 2 ft and less, foundry steel 1 ft and less	11.00
Structural and plate scrap, 1 ft and less	12.00
Rails, 3 ft & less; cut tires; cut bolsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

Hamilton, Ontario

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	$35.00
No. 1 bundles	35.00
No. 2 bundles	34.00
Mechanical bundles	33.00
Mixed, steel scrap	31.00
Rails, remelting	35.00
Rails, rerolling	38.00
Bushelings	29.50
Bushelings, prepared new factory	33.00
Bushelings, unprepared new factory	28.00
Short steel turnings	28.00
Mixed borings, turnings	28.00
Cast scrap	58.00 to 60.00

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Comparison of Prices

Steel prices in this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Aug. 14, 1951	Aug. 7, 1951	July 17, 1951	Aug. 15 1950
Hot-rolled sheets	3.60	3.60	3.60	3.35
Cold-rolled sheets	4.35	4.35	4.35	4.10
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.40
Hot-rolled strip	3.50	3.50	3.50	3.25
Cold-rolled strip	4.75	4.75	4.75	4.21
Plate	3.70	3.70	3.70	3.50
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	34.50
Tin and Ternplate: (dollars per base box)				
Tinplate (1.50 lb.) cokes.	$8.70	$8.70	$8.70	$7.50
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	6.60
Special coated mfg. ternes	7.50	7.50	7.50	6.35
Bars and Shapes: (cents per pound)				
Merchant bars	3.70	3.70	3.70	3.45
Cold finished bars	4.55	4.55	4.55	4.145
Alloy bars	4.30	4.30	4.30	3.95
Structural shapes	3.65	3.65	3.65	3.40
Stainless bars (No.302)	31.50	31.50	31.50	30.00
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.85	4.85	4.85	4.50
Rails: (dollars per 100 lb)				
Heavy rails	$3.60	$3.60	$3.60	$3.40
Light rails	4.00	4.00	4.00	3.75
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$56.00	$56.00	$56.00	$54.00
Slabs, rerolling	56.00	56.00	56.00	54.00
Forging billets	66.00	66.00	66.00	63.00
Alloy blooms billets, slabs	70.00	70.00	70.00	66.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	4.10	4.10	4.10	3.85
Skelp	3.35	3.35	3.35	3.15

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*

Pig Iron: (per gross ton)	Aug. 14, 1951	Aug. 7, 1951	July 17, 1951	Aug. 1 195
No. 2 foundry, del'd Phila.	$57.77	$57.77	$57.77	$51.7
No. 2, Valley furnace	52.50	52.50	52.50	46.5
No. 2, Southern Cin'ti	55.58	55.58	55.58	49.0
No. 2, Birmingham	48.88	48.88	48.88	42.3
No. 2, foundry, Chicago†	52.50	52.50	52.50	46.5
Basic del'd Philadelphia	56.92	56.92	56.92	50.9
Basic, Valley furnace	52.00	52.00	52.00	46.0
Malleable, Chicago†	52.50	52.50	52.50	46.5
Malleable, Valley	52.50	52.50	52.50	46.5
Charcoal, Chicago	70.56	70.56	70.56	68.5
Ferromanganese‡	186.25	186.25	186.25	173.4

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$44.00*	$44.00*	$44.00*	$44.7
No. 1 steel, Phila. area	42.50*	42.50*	42.50*	37.5
No. 1 steel, Chicago	42.50*	42.50*	42.50*	38.5
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	38.5
Low phos. Young'n	46.50*	46.50*	46.50*	46.7
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	47.7
No. 1 cast, Philadelphia	49.00†	49.00†	49.00†	41.5
No. 1 cast, Chicago	49.00†	49.00†	49.00†	49.5

*Basing Pt. †Shipping Pt.
Not including broker's fee after Feb. 7, 1951.

Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.2
Foundry coke, prompt	17.75	17.75	17.75	16.2
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	22.5
Copper, Lake, Conn.	24.625	24.625	24.625	22.6
Tin, Straits, New York	$1.03†	$1.03	$1.06	$1.0
Zinc, East St. Louis	17.50	17.50	17.50	15.0
Lead, St. Louis	16.80	16.80	16.80	12.8
Aluminum, virgin	19.00	19.00	19.00	17.5
Nickel, electrolytic	59.58	59.58	59.58	51.2
Magnesium, ingot	24.50	24.50	24.50	22.5
Antimony, Laredo, Tex.	42.00	42.00	42.00	24.5

†Tentative. •Revised.

Composite Prices

[Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1949, issue.)]

	Finished Steel Base Price	Pig Iron	Scrap Steel
Aug. 14, 1951	4.131¢ per lb.	$52.69 per gross ton	$43.00 per gross ton
One week ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton
One month ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton
One year ago	3.837¢ per lb.	46.61 per gross ton	40.25 per gross ton

	Finished Steel Base Price High		Finished Steel Base Price Low		Pig Iron High		Pig Iron Low		Scrap Steel High		Scrap Steel Low	
1951	4.131¢	Jan. 2	4.131¢	Jan. 2	$52.69	Jan. 2	$52.69	Jan. 2	$47.75	Jan. 30	$43.00	Feb. 7
1950	4.131¢	Dec. 1	3.837¢	Jan. 3	52.69	Dec. 12	45.88	Jan. 3	45.13	Dec. 19	26.25	Jan. 3
1949	3.837¢	Dec. 27	3.3705¢	May 3	46.87	Jan. 18	45.88	Sept. 6	43.00	Jan. 4	29.33	June 28
1948	3.721¢	July 27	3.193¢	Jan. 1	46.91	Oct. 12	39.58	Jan. 6	43.16	July 27	39.75	Mar. 9
1947	3.193¢	July 29	2.848¢	Jan. 1	37.98	Dec. 30	30.14	Jan. 7	42.58	Oct. 28	29.50	May 20
1946	2.848¢	Dec. 31	2.464¢	Jan. 1	30.14	Dec. 10	25.37	Jan. 1	31.17	Dec. 24	19.17	Jan. 1
1945	2.464¢	May 29	2.396¢	Jan. 1	25.37	Oct. 23	23.61	Jan. 2	19.17	Jan. 2	18.92	May 22
1944	2.396¢		2.396¢		$23.61		$23.61		19.17	Jan. 11	15.76	Oct. 24
1943	2.396¢		2.396¢		23.61		23.61		$19.17		$19.17	
1942	2.396¢		2.396¢		23.61		23.61		19.17		19.17	
1941	2.396¢		2.396¢		$23.61	Mar. 20	$23.45	Jan. 2	$22.00	Jan. 7	$19.17	Apr. 15
1940	2.30467¢	Jan. 2	2.24107¢	Apr. 16	23.45	Dec. 23	22.61	Jan. 2	21.83	Dec. 30	16.04	Apr. 9
1939	2.35367¢	Jan. 3	2.26689¢	May 16	22.61	Sept. 19	20.61	Sept. 12	22.50	Oct. 3	14.08	May 16
1938	2.58414¢	Jan. 4	2.27207¢	Oct. 18	23.25	June 21	19.61	July 6	15.00	Nov. 22	11.00	June 7
1937	2.58414¢	Mar. 9	2.32263¢	Jan. 4	32.25	Mar. 9	20.25	Feb. 16	21.92	Mar. 30	12.67	June 8
1936	2.32263¢	Dec. 28	2.05200¢	Mar. 10	19.74	Nov. 24	18.73	Aug. 11	17.75	Dec. 21	12.67	June 8
1932	1.89196¢	July 5	1.83910¢	Mar. 1	14.81	Jan. 5	13.56	Dec. 6	8.50	Jan. 12	6.43	July 5
1929	2.31773¢	May 28	2.26498¢	Oct. 29	18.71	May 14	18.21	Dec. 17	17.58	Jan. 29	14.08	Dec. 6

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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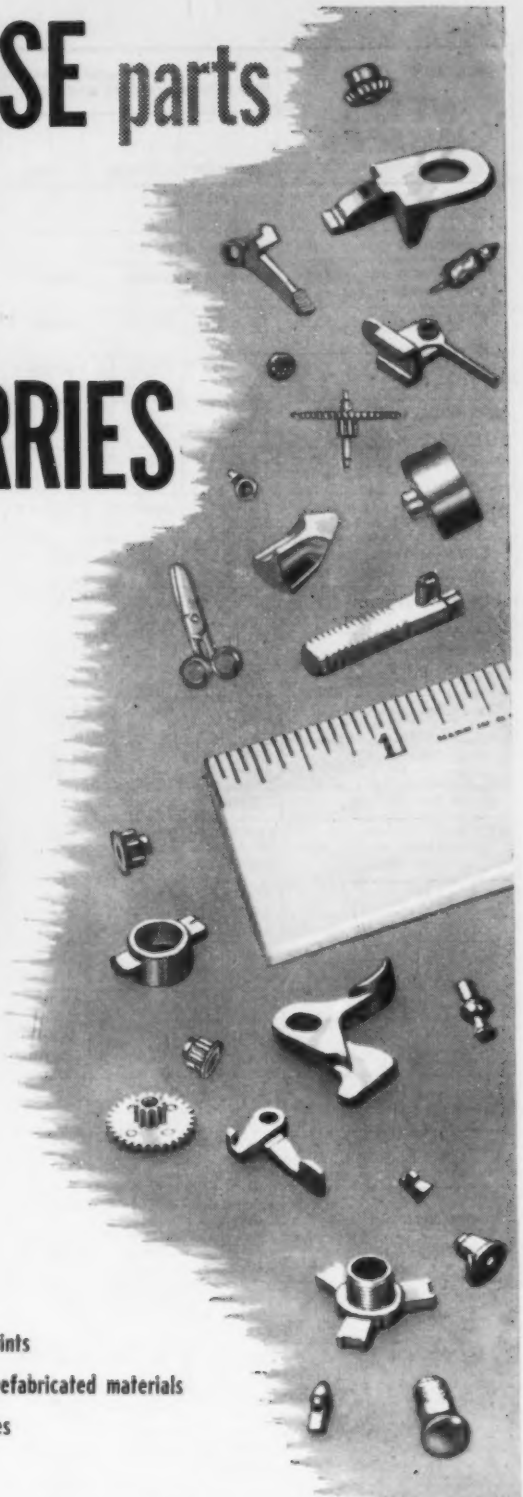

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IRON AGE

STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$52.00[1]													
Alloy, net ton	$54.00[1,17]													$54.00[31]
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$56.00[1,8]	$56.00[1]	$56.00[1]						$56.00[3]		$56.00[3]			
Carbon forging billets, net ton	$66.00[1,8]	$66.00[1,4]	$66.00[1]	$66.00[4]	$66.00[4]				$66.00[3,4]	$73.00[26]	$66.00[3]			$68.00[31]
Alloy, net ton	$70.00[1,17,8]	$70.00[1,4]	$70.00[1,8]		$70.00[4]			$70.00[3]	$70.00[3,4]	$77.00[26]	$70.00[3]			$73.00[31]
PIPE SKELP	3.35[1] 3.45[5]						3.35[1,4]							
WIRE RODS	4.10[3] 4.30[18]	4.10[3,4,33]	4.10[6]	4.10[3]			4.10[6]		4.10[35]		4.10[3]	4.20[3]		
SHEETS Hot-rolled (18 ga. & hvr.)	3.60[1,5,9,15] 3.75[28]	3.60[5,33]	3.60[1,6,8]	3.80[4,5]		3.60[7]	3.60[1,4,6] 4.00[12]		3.60[3]	4.00[26]		3.60[3]	4.30[32]	3.80[31] 4.40[47]
Cold-rolled	4.35[1,5,9,15,7]		4.35[1,6,8]	4.35[4,5]		4.35[7]	4.35[4,6]		4.35[3]			4.35[3]	5.05[32]	4.55[31]
Galvanized (10 gage)	4.80[1,9,15]		4.80[1,8]		4.80[4]	4.80[7]	5.50[44] 6.00[54]					4.80[3]	5.50[32]	
Enameling (12 gage)	4.65[1]		4.65[1,8]	4.65[4]		4.65[7]	4.65[6]						5.35[32]	
Long terne (10 gage)	5.20[9,15]		5.20[1]			5.20[7]	6.00[54]							
Hi str. low alloy, h.r.	5.40[1,5] 5.75[9]	5.40[1]	5.40[1,8] 5.90[6]	5.40[4,5]			5.40[1,4,13] 5.90[6]		5.40[3]	5.65[26]		5.40[3]		5.95[12]
Hi str. low alloy, c.r.	6.55[1,5] 6.90[9]		6.55[1,8] 7.05[6]	6.55[4,5]			6.55[4] 7.05[6]		6.55[3]			6.55[3]		7.10[12]
Hi str. low alloy, galv.	7.20[1]											6.75[3]		
STRIP Hot-rolled	3.80[9] 4.00[41,58] 3.75[28] 3.50[5,7]	3.50[56]	3.50[1,6,8]			3.50[7]	3.50[1,4,6] 4.00[13]		3.50[3,4]	3.90[26]	3.50[3]	3.50[3]		4.40[47] 3.80[12]
Cold-rolled	4.65[5,7,9] 5.00[28] 5.35[40,63,58]	4.90[5,66]	4.90[6]	4.65[2,5]		4.65[7]	4.65[4,6] 5.25[48,49] 5.35[13,49]		4.65[3]			4.65[3]		4.85[12] 5.45[47] 5.80[48,61]
Hi str. low alloy, h.r.	5.75[9]		5.50[1] 5.30[6] 5.80[6]				4.95[4] 5.50[1] 5.40[13] 5.80[6]		4.95[3]	5.55[26]		4.95[3]		5.95[12]
Hi str. low alloy, c.r.	7.20[9]			6.55[2] 6.70[5]			6.20[4] 6.55[13] 7.05[6]		6.40[3]			6.40[3]		
TINPLATE† Coke, 1.25-lb base box (1.50 lb, add 25¢)	$8.45[1,5,9,15]		$8.45[1,6,8]				$8.45[4]					$8.55[3]		
Electrolytic 0.25, 0.50, 0.75 lb box	0.25 lb base box, $7.15[1,4,5,8,9]; $7.25[3,11]; $7.35[22] 0.50 lb, add 25¢; 0.75 lb add 65¢													
BLACKPLATE, 29 gage Hollowware enameling	5.85[1] 6.15[18]		5.85[1]				5.30[4]							
BARS Carbon steel	3.70[1,5] 3.85[9]	3.70[1,4,33]	3.70[1,4,6,8]	3.70[4]	3.70[4]		3.70[1,4,6]		3.70[3,4]		3.70[3]			3.85[31]
Reinforcing	3.70[1,5]	3.70[4]	3.70[1,6,8]	3.70[4]			3.70[1,4,6]		3.70[3,4]		3.70[3]	3.70[3]		
Cold-finished	4.55[2,4,5,52,69,71]	4.55[3,25,70]	4.55[4,74,73]	4.55[2]	4.55[4,32]		4.55[6,57]		4.60[70]					4.70[64]
Alloy, hot-rolled	4.30[1,17]	4.30[1,4,23]	4.30[1,6,8]		4.30[4]		4.30[1,6]	4.30[8]	4.30[3,4]		4.30[3]			4.45[31] 4.65[12]
Alloy, cold-drawn	5.40[17,52,69,71,2]	5.40[4,23,69,70,73] 5.45[2]	5.40[4,73,74]		5.40[4,32]		5.40[6,25,57]	5.40[3]	5.40[3]					5.55[64]
Hi str. low alloy, h.r.	5.55[1,5]		5.55[1,8] 6.05[6]	5.55[4,5]			5.55[1] 6.05[6]	5.55[3]	5.55[3]		5.55[3]			
PLATE Carbon steel	3.70[1,5,15] 4.00[9]	3.70[1,23]	3.70[1,6,8]	3.70[4,5]			3.70[1,4,6] 3.95[13]		3.70[3]	4.15[26]	3.70[3]	3.70[3]	4.40[22]	
Floor plates	4.75[1]	4.75[1]	4.75[8]	4.75[5]						4.75[26]				
Alloy	4.75[1]	4.75[1]	4.75[1]				5.20[13]			5.05[26]	4.75[3]	4.75[3]		
Hi str. low alloy	5.65[1,5]	5.65[1]	5.65[1,8] 6.15[6]	5.65[4,5]			5.65[4] 5.70[13] 6.15[6]			5.90[26]	5.65[3]	5.65[3]		
SHAPES, Structural	3.65[1,5] 3.90[9]	3.65[1,23]	3.65[1,8]					3.70[3]	3.70[3]		3.70[3]			
Hi str. low alloy	5.50[1,5]	5.50[1]	5.50[1,8] 6.00[6]				6.00[6]	5.50[3]	5.50[3]		5.50[3]			
MANUFACTURERS' WIRE Bright	4.85[2,5] 5.10[18]	4.85[2] 4.33,34		4.85[2]			4.85[6]	Kokomo—4.95[30] 4.85[35]			4.85[3]	4.95[3]	Duluth—4.85[3]	
PILING, Steel Sheet	4.45[1]	4.45[1]	4.45[8]						4.45[3]					

STEEL PRICES

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F=$79.00[19]		INGOTS Carbon forging, net ton
	$62.00[83]		F=$80.00[19]		Alloy, net ton
		$56.00[11]	F=$75.00[19]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$74.00[83]	$66.00[11]	F=$85.00[19] SF, LS, S=$85.00[62]	Geneva=$86.00[16]	Carbon forging billets, net ton
	$78.00[83]		F=$89.00[19] LA=$90.00[62]		Alloy net ton
					PIPE SKELP
	4.90[83]	4.10[4,11]	SF=4.90[2], F=4.90[19] LA=4.90[24,62]	Worcester=4.40[3] Minnequa=4.35[14] Portsmouth=4.30[20]	WIRE RODS
		3.60[4,11]	SF, LA=4.30[24] F=4.55[19]	Niles=5.25[84], Geneva=3.70[16] Ashland=3.60[7]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.35[11]	SF=5.30[24] F=5.30[19]		Cold-rolled
		4.80[4,11]	SF, LA=5.55[24]	Ashland=4.80[7] Kokomo=5.20[30]	Galvanized (10 gage)
				Ashland=4.65[7]	Enameling (12 gage)
					Long ternes (10 gage)
		5.40[11]	F=6.35[19]		Hi str. low alloy, h.r.
			F=7.50[19]		Hi str. low alloy, c.r.
					Hi str. low alloy, galv.
4.10[83]	4.90[83]	3.50[4,11]	SF, LA=4.25[24,62] F=4.75[19], S=4.50[62]	Atlanta=4.05[85] Minnequa=4.55[14] Ashland=3.50[7]	STRIP Hot-rolled
			F=6.30[19] LA=6.40[27]	New Haven=5.15[3], 5.85[58] Trenton=6.00[45]	Cold-rolled
		5.30[11]	F=6.20[19] SF, LA=6.05[62] S=6.30[62]		Hi str. low alloy, h.r.
			F=6.95[19]		Hi str. low alloy, c.r.
		$8.55[11]	SF=9.20[24]		TINPLATE Cokes, 1.25-lb base box (1.50 lb, add 25¢)
					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.30[83]	4.10[83]	3.70[4,11]	SF, LA=4.40[24]	Atlanta=4.25[85] Minnequa=4.15[14]	BARS Carbon steel
4.30[83]	4.10[83]	3.70[4,11]	SF, S=4.45[62] F=4.40[19], LA=4.40[62]	Atlanta=4.25[85] Minnequa=4.50[14]	Reinforcing
			LA=6.00[4]	Newark=5.00[69] Putnam=5.10[69] Hartford=5.10[4]	Cold-finished
4.90[83]	4.70[83]		LA=5.35[62] F=5.35[19]		Alloy, hot-rolled
				Newark=5.75[69] Worcester=5.75[2] Hartford=5.85[4]	Alloy, cold-drawn
		5.55[11]	F=6.60[19] SF, S=6.30[62] LA=6.25[62]	Claymont=4.15[29] Coatesville=4.15[21]	Hi str. low alloy, h.r.
	4.10[83]	3.70[4,11]	F=4.30[19] S=4.60[62]	Harrisburg=4.95[35] Minnequa=4.50[14] Geneva=3.70[16]	PLATE Carbon steel
				Harrisburg=5.95[35]	Floor plates
			F=5.70[19]	Coatesville=5.25[21] Claymont=4.85[29]	Alloy
		5.65[11]	F=6.25[19] S=6.55[62]	Geneva=5.85[16]	Hi str. low alloy
4.25[83]	4.05[83]	3.60[4] 3.65[11]	SF=4.20[62] F=4.25[16] LA=4.25[24,62] S=4.30[62]	Geneva 3.85[16] Minnequa 4.10[14] Phoenixville=4.95[56]	SHAPES, Structural
		5.50[11]	SF=6.10[62,10] SF=6.00[62] LA=6.05[62]	Geneva=5.50[16]	Si str. low alloy
5.45[83]	5.25[83]	4.85[4,11]	SF, LA=5.80[24]	Atlanta=5.10[85] Worcester=5.15[3] Minnequa=5.10[14] Portsmouth=5.25[20]	MANUFACTURERS' WIRE Bright

†Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $2.20 from 1.25-lb coke base box.

Key to Steel Producers

1 U. S. Steel Co., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calstrip Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Claymont Steel Corp., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling St. & Carbide Corp., McKeesport
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Fran.
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wycoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 Wickwire Spencer Steel, Buffalo
86 Angell Nail and Chaplet, Cleveland
87 Mid-States Steel & Wire, Crawfordsville, Ind.
88 National Supply, Pittsburgh, Pa.
89 Wheatland Tube Co., Wheatland, Pa.
90 Mercer Tube & Mfg. Co., Sharon, Pa.
91 Woodward Iron Co., Woodward, Ala.
92 Sloss-Sheffield Steel & Iron Co., Birmingham
93 Hanna Furnace Corp., Detroit
94 Interlake Iron Corp., Cleveland
95 Lone Star Steel Co., Dallas
96 Mystic Iron Works, Everett, Mass.
97 Jackson Iron & Steel Co., Jackson, O.
98 Globe Iron Co., Jackson, O.
99 Pittsburgh Coke & Chemical Co., Pittsburgh
100 Shenango Furnace Co., Pittsburgh
101 Tennessee Products & Chem. Corp., Nashville
102 Koppers Co., Inc., Granite City, Ill.
103 Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
104 Wallingford Steel Co., Wallingford, Conn.

UNIVERSITY OF MICHIGAN LIBRARIES

STAINLESS STEELS

Base price cents per lb, f.o.b. mill.

Product	301	302	303	304	316	321	347	410	416	430
Ingots rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs billets rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs die blocks rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4, 5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 45.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4, 5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13; Butler, Pa., 7; Wallingford, Conn., 104.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.

Plates: Brackenridge, Pa., 28 (type 416 add ½¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

•ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 Series.

WASHINGTON STEEL—Slightly lower on 300 Series except where noted.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Base Col.	Woven Wire Fence 9-15½ ga. Base Col.	Fence Posts Base Col.	Single Loop Bale Ties Base Col.	Twisted Barbless Wire Base Col.	Gal. Barbed Wire Base Col.	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Gal. (1) ¢/lb.
Alabama City-4	118	126	...	123	...	136	5.70	5.95
Aliquippa, Pa.-5	118	132	...	...	136	140	5.70	6.15
Atlanta-65	121	133	...	126	126	143	5.95	6.40
Bartonville-34	118	130	...	123	143	143	5.70	6.15
Buffalo-85	...	...	...	...	...	...	4.85	....
Cleveland-86	125	...	...	...	...	...	...	....
Cleveland-2	...	...	...	...	...	...	5.70	6.15
Crawfordsville-87	...	132	...	...	...	145	5.95	6.40
Donora, Pa.-2	118	130	...	123	140	140	5.70	6.15
Duluth-2	118	130	...	123	140	140	5.70	6.15
Fairfield, Ala.-11	118	130	...	123	...	140	5.70	6.15
Houston-83	126	138	...	...	...	148	6.10	6.55
Johnstown, Pa.-3	118	130	...	...	140	...	5.70	6.15
Joliet, Ill.-2	118	130	...	123	...	140	5.70	6.15
Kokomo, Ind.-30	120	132	...	125	138	142	5.80	6.05
Los Angeles-62	...	...	...	...	...	...	6.65	....
Kansas City-83	130	...	...	135	...	152	6.30	6.75
Minnequa-14	123	138	130	128	146	146	5.95	6.45
Monessen-18	124	135	...	...	...	145	5.95	6.40
Moline, Ill.-4	...	...	136	...	...	...	...	....
Pittsburg, Cal.-24	137	...	...	147	156	160	6.65	6.80
Portsmouth-20	124	137	...	...	147	147	6.10	6.60
Rankin, Pa.-2	118	130	...	...	140	140	5.70	6.15
So. Chicago, Ill.-4	118	126	140	123	...	136	5.70	5.95
S. San Fran.-14	...	...	...	147	...	160	6.65	7.10
Sparrows Pt.-3	120	...	...	125	142	142	5.80	6.25
Sterling, Ill.-33	118	130	...	123	140	140	5.70	6.15
Struthers, Ohio-6	...	...	...	...	...	...	5.70	6.15
Torrance, Cal.-24	138	...	...	...	...	...	6.65	....
Worcester-2	124	...	...	...	...	...	6.00	6.45
Williamsport, Pa.-51	...	...	150	...	...	...	...	....

Cut Nails, carloads, base, $7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (15), $7.15.

(1) Alabama City and So. Chicago do not include zinc extra.

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$105.30 to $108.80
6 to 24-in., del'd N. Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	123.00 to 130.00

Class "A" and as pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS				
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-[illegible]
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.
STANDARD T. & C.																			
Sparrows Pt.-3	34.0	12.0	37.0	16.0	39.5	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0	...	...	...	...	...
Cleveland-4	36.0	14.0	39.0	18.0	41.5	21.5	42.9	22.0	42.5	23.0	43.0	23.5	43.5	24.0	...	...	...	...	...
Oakland-19	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0	...	...	...	...	...
Pittsburgh-5	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5
Pittsburgh-10	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5
St. Louis-32	35.0	13.0	38.0	17.0	40.0	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0	...	...	...	...	...
Sharon-90	36.0	13.0	39.0	17.0	41.5	20.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0	...	...	...	...	...
Pittsburgh-88	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	...	32.5	...	34.5
Wheeling-15	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	...	...	...	...	...
Wheatland-89	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	...	...	...	...	...
Youngstown-6	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5
EXTRA STRONG, PLAIN ENDS																			
Sparrows Pt.-3	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0	...	...	...	...	...
Cleveland-4	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	...	...	...	...	...
Oakland-19	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0	...	...	...	...	...
Pittsburgh-5	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5
Pittsburgh-10	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5
St. Louis-32	34.5	14.0	38.5	18.0	40.5	21.5	41.0	22.0	41.5	23.0	42.0	23.5	42.5	24.0	...	...	...	...	...
Sharon-90	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0	...	...	...	...	...
Pittsburgh-88	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	...	33.0	...	36.5
Wheeling-15	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	...	...	...	...	...
Wheatland-89	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	...	...	...	...	...
Youngstown-6	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0	36.5

Galvanized discounts based on zinc at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ½ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢ or more.

Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 2½ pts. higher discount. Buttweld jobbers' discount, 5 pct.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts
Bessemer-1	3.60	4.00	4.70					
Chicago-4				6.15				
Ensley-11	3.60	4.00						
Fairfield-11		4.00	4.40			8.80	4.50	
Gary-1	3.60	4.00					4.50	
Ind. Harbor-8	3.60		4.70	6.15	5.60	8.80	4.50	
Johnstown-3		4.00			5.60	8.80		
Joliet-1		4.00	4.70					
Kansas City-83				6.40				
Lackawanna-3	3.60	4.00	4.70			8.80	4.50	
Lebanon-3				6.15				
Minnequa-14	3.60	4.50	4.70	6.15		8.80	4.50	
Pittsburgh-77						9.35		
Pittsburgh-78								
Pittsburgh-5				6.15				
Pittsburgh-24							4.65	
Seattle-62				6.65			4.65	
Steelton-3	3.60		4.70				4.50	
Struthers-6				6.15				
Torrance-24							4.65	
Youngstown-4				6.15				

BOILER TUBES

$ Per 100 ft., cut, 10 to 24 ft.

F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	22.87	28.66	21.90	28.66
	2½	12	30.48	35.84	29.57	34.76
	3	12	33.90	39.90	32.89	38.70
	3½	11	42.37	49.80	41.10	48.30
	4	10	52.60	61.88	51.03	60.00
National Tube	2	13	21.62	26.48	...	...
	2½	12	29.65	36.32	...	...
	3	12	34.00	41.64	...	...
	3½	11	40.34	49.41	...	...
	4	10	51.21	62.72	...	...
Pittsburgh Steel	2	13	...	27.06	...	...
	2½	12	30.49	37.15	...	...
	3	12	34.95	42.59	...	...
	3½	11	41.48	50.54	...	...
	4	10	52.65	64.16	...	...

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:

70% or more $43.00

60% or less 40.00

WAREHOUSES

Base price, f.o.b., dollars per 100 lb. *(Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

Cities	Sheets			Strip		Plates	Shapes	Bars		Alloy Bars			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4615 As rolled	Cold-Drawn A 4140 Annealed
[illegible]	5.60	6.84	7.49[2]–8.07	6.04	.....	5.80	6.14	6.04	6.84–6.89	10.24	10.54	11.89	12.19
[illegible]ingham*	5.60	6.40	6.75	5.55	.....	5.95	5.70	5.55	.....	.....	.....	.....	.....
[illegible]	6.20	7.00–7.25	7.74–8.29	6.15	8.50[4]	6.48–6.78	6.20	6.05	6.79–6.84	10.25	10.55	11.90–12.00	12.20–12.30
[illegible]	5.60	6.40	7.74–8.09	5.86	.....	6.05	5.80	5.60	6.40–6.45	10.15–10.85	10.45	11.80	11.95–12.10
[illegible]ago	5.80	6.40	7.75	5.55	.....	5.80	5.70	5.55	6.30	9.80	10.10	11.45	11.75
[illegible]innati*	5.87	6.44	7.39	5.80	.....	6.19	6.09	5.80	6.61	10.15	10.45	11.80	12.10
[illegible]eland	5.60	6.40	8.10	5.69	6.90	5.92	5.82	5.57	6.40	9.91	10.21	11.86	11.86
[illegible]roit	5.78	6.53	7.89	5.94	.....	5.99	6.09	5.84	6.56	10.11	10.41	11.76	12.06
[illegible]ston	7.00	8.25	.....	.....	.....	6.85	6.50	6.65	9.35	10.35	11.25	.....	12.75
[illegible]napolis, del'd.	6.00	6.80	8.15	5.95	.....	6.20	6.10	5.95	6.80	.....	.....	.....	.....
[illegible]as City	6.00	6.80	7.45	6.15	7.50	6.40	6.30	6.15	7.00	10.40	10.70	12.05	12.35
[illegible] Angeles	6.35	7.90	8.85	6.40	9.45[6]	6.40	6.35	6.35	8.20	11.30	11.30	13.20	13.50
[illegible]mphis*	6.33–6.38	7.08–7.18	.....	6.33–6.38	.....	6.43–6.62	6.33–6.48	6.08–6.33	7.16–7.32	.....	.....	.....	.....
[illegible]waukee	5.74	6.54	7.89	5.69–6.59	.....	5.94	5.84	5.69	6.44–6.54	9.94	10.24	11.89	11.99
[illegible] Orleans*	5.70	6.59	.....	5.75	7.25	5.95	5.75	5.75	7.30	.....	.....	.....	.....
[illegible] York*	5.67–5.97	7.19[5]–7.24[1]	8.14[2]	6.29–6.89	8.63[4]	6.28–6.58	6.10	6.12	6.99	10.05–10.15	10.35–10.45	11.70–11.80	12.10–12.20
[illegible]folk	6.50[3]	.....	.....	.....	.....	6.50[3]	6.60[3]	6.55[3]	.....	.....	.....	.....	.....
[illegible]adelphia*	5.90	6.80	8.00	6.10	.....	6.05	5.90	6.05	6.86	9.90	10.20	.....	.....
[illegible]sburgh	5.60	6.40	7.75	5.65–5.95	.....	5.75	5.70	5.55	6.15	9.80	10.10	11.45	11.75
[illegible]land	6.60–7.55	8.95	8.50–9.10	7.30	.....	6.90	6.95	6.90	.....	.....	12.15	.....	.....
[illegible] Lake City	7.95	.....	9.70–10.50[2]	8.70–8.75	.....	8.05	8.75–8.30	7.95–8.65	9.00	.....	.....	.....	.....
[illegible] Francisco*	6.65	8.05[2]	8.55–8.90[2]	6.60	9.95[6]	6.50	6.45	6.45	8.20	11.30	11.30	13.20	13.20–13.50
[illegible]ttle	7.05	8.60	9.20	9.05	.....	6.75	6.65	6.75	9.05	.....	.....	.....	.....
[illegible] Louis	5.80–5.85	6.65	8.00	5.80	8.00[4]–8.28	6.13	6.03	5.80	6.55–6.65	10.05	10.35	11.70	12.00
[illegible] Paul*	6.16	6.96	8.31	6.11	.....	6.38	6.26	6.11	6.96	10.36	10.66	12.01	12.31

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to [illegible] lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.
EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; [illegible] 2000 to 5999 lb.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Blast Furnace Silvery	Low Phos. Charcoal
[illegible]hlehem-3	54.00	54.50	55.00	55.50	.....	.....	.....
[illegible]mingham-4	48.38	48.88	.....	.....	.....	.....	.....
[illegible]mingham-91	48.38	48.88	.....	.....	.....	.....	.....
[illegible]mingham-92	48.38	48.88	.....	.....	.....	.....	.....
[illegible]falo-4	52.00	52.50	53.00	.....	.....	.....	.....
[illegible]falo-93	52.00	52.50	53.00	.....	.....	63.75	.....
[illegible]cago-94	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]eland-2	52.00	52.50	52.50	53.00	57.00	.....	.....
[illegible]eland-4	52.00	52.50	52.50	.....	.....	.....	.....
[illegible]ngerfield, Tex.-95	48.00	48.50	48.50	.....	.....	.....	.....
[illegible]uth-94	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]o-94	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]rett, Mass.-96	.....	55.25	55.75	.....	.....	.....	.....
[illegible]ntana-19	58.00	58.50	.....	.....	.....	.....	.....
[illegible]eva, Utah-16	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]nite City, Ill.-102	53.90	54.40	54.90	.....	.....	.....	.....
[illegible]khard, Ohio-6	52.00	52.50	52.50	.....	.....	.....	.....
[illegible]rton, Utah-16	52.00	52.50	.....	.....	.....	.....	.....
[illegible]kson, Ohio-97, 98	.....	.....	.....	.....	.....	62.50	.....
[illegible]k, Tenn.-101	.....	.....	.....	.....	.....	.....	66.00
[illegible]nessen-18	54.00	.....	.....	.....	.....	.....	.....
[illegible]ville Island-99	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]sburgh-1	52.00	.....	.....	53.00	.....	.....	.....
[illegible]rsville-100	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]rton-3	54.00	54.50	55.00	55.50	60.00	.....	.....
[illegible]edeland-26	56.00	56.50	57.00	57.50	.....	.....	.....
[illegible]do-94	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible]y, N. Y.-4	54.00	54.50	55.00	.....	60.00	.....	.....
[illegible]ungstown-6	52.00	52.50	52.50	53.00	.....	.....	.....
[illegible] Tonawanda, N. Y.-105	.....	52.00	53.00	.....	.....	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos. 1.75 to 2.00 [illegible], 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 p t [illegible]el. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per ton for each 0.50 per [illegible]con over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer [illegible]rosilicon prices are $1 over comparable silvery iron.

REFRACTORIES

Fire Clay Brick

(F.o.b. works) Carloads, Per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5) $94.60
No. 1 Ohio 88.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00
No. 2 Ohio 79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50) 13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala. $94.60
Childs, Pa. 99.00
Hays, Pa. 100.10
Chicago District 104.50
Western Utah and Calif. 111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago 111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.) 16.50
Silica cement, net ton, bulk, Hays, Pa. 18.70
Silica cement, net ton, bulk, Ensley, Ala. 17.60
Silica cement, net ton, bulk, Chicago District 17.60
Silica cement, net ton, bulk, Utah and Calif. 24.70

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester $82.00

Magnesite Brick

Standard, Baltimore $104.00
Chemically bonded, Baltimore 93.00

Grain Magnesite

St. ⅜-in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed $62.70
Domestic, f.o.b. Chewelah, Wash., in bulk 36.30
in sacks 41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢ $13.00

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$17.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$26.69
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports) *Per gross ton*

Old range, bessemer $8.70
Old range, nonbessemer 8.55
Mesabi, bessemer 8.45
Mesabi, nonbessemer 8.30
High phosphorus 8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

C-R SPRING STEEL

F.o.b. Mill Cents Per Lb.	CARBON CONTENT				
	0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn.-58	5.35	6.80	7.40	9.35	11.65
Carnegie, Pa.-41	.....	6.80	7.40	9.35	11.65
Cleveland-2	4.65	6.45	7.40	9.35	11.65
Detroit-68	5.60	6.65	7.25	.....	.....
New Castle, Pa.-40	5.35	6.80	7.40	9.35	.....
New Haven, Conn.-68	5.65	6.75	7.35	.....	.....
Sharon, Pa.-13	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va.-9	5.35	6.80	7.40	9.35	11.65
Worcester, Mass.-2	4.95	6.75	7.70	9.65	11.65
Youngstown-49	.....	6.80	7.40	9.35	11.65

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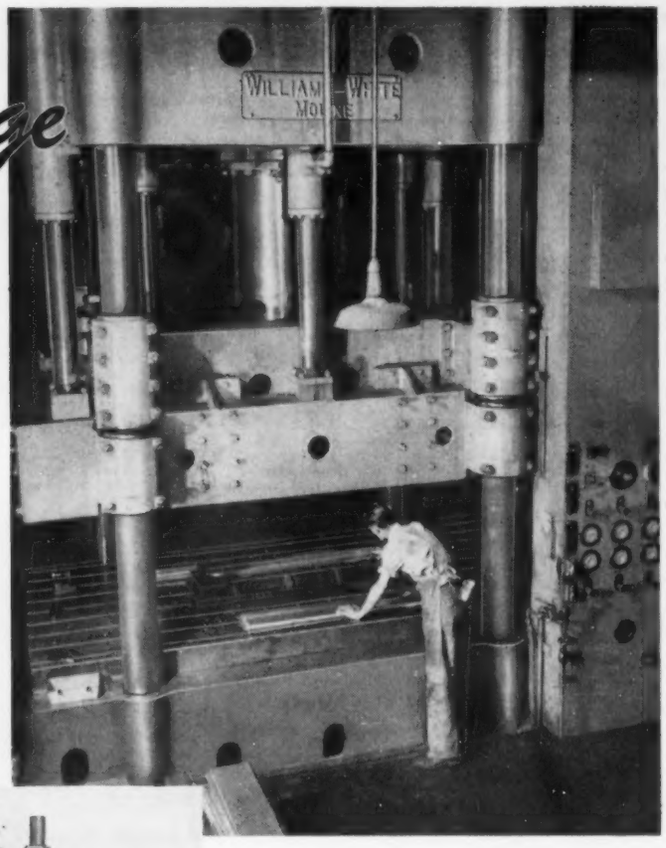
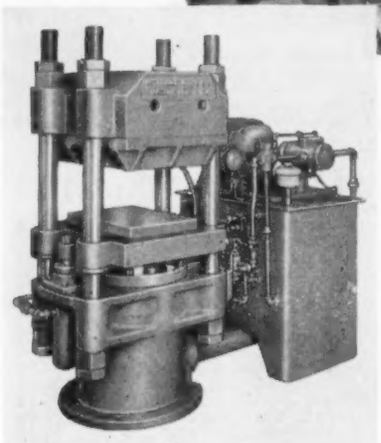


or Small



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Machine and Carriage Bolts

	Pct Off List Less Case	C
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	13½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in...	14	27½
Lag, all diam. x 6 in. & shorter	23	35
Lag, all diam. longer than 6 in.	21	33
Plow bolts	34	...

Nuts, Hot Pressed, Cold Punched—S

	Pct Off List Less Keg (Reg.)	K.	Less Keg (Hvy.)	K.
½ in. & smaller.	15	28½	15	28½
9/16. in. & ⅝ in..	12	25	6½	21
¾ in. to 1½ in. inclusive	9	23	1	16½
1⅝ in. & larger.	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in..	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger.	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in..	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger.	12	26	6½	21

Nuts, Semi-Finished—Hexagon

	Reg.		Hvy.	
½ in. & smaller.	35	45	28½	39½
9/16 in. & ⅝ in..	29½	40½	22	34
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger.	13	26	8½	23
	Light			
7/16 in. & smaller	35	45		
½ in. thru ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts — *Pct Off List*
Packaged, steel, plain finished 48—10
Packaged, plated finish ..... 31—10
Bulk, plain finish**..... 62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets — *Base per 100 lb.*
½ in. & larger..... $7.85
Pct Off List
7/16 in. & smaller..... 10
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

Cap and Set Screws
(In bulk) — *Pct Off List*
Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright..... 54
¾ in. thru 1 in. up to & including 6 in. 48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat..... 46
¾ in. thru 1 in. up to & including 6 in. 41
Milled studs 26
Flat head cap screws, listed sizes.... 16
Fillister head cap, listed sizes..... 24
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter 53

S. M. Ferrochrome
Contract price, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads 21.50
Ton lots 23.75
Less ton lots 25.25
Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.
Carloads 27.75
Ton lots 30.05
Less ton lots 31.55

ELECTRODES

Cents per lb., f.o.b. plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
17, 18, 20	60, 72	17.85
6 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
3⅛	24, 30	23.15
2	24, 30	25.36
	CARBON	
40	100, 110	8.03
35	65, 110	8.03
30	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. (21)	*29.5	
Washgtn, Pa. (39)	*29.5	
Claymont, Del. (29)	*28.00	
Conshohocken, Pa. (26)		*27.50
New Castle, Ind. (55)	*26.50	*25.50
Nickel-carbon		
10 pct Coatesville (21)	32.5	
Inconel-carbon		
10 pct Coatesville (21)	40.5	
Monel-carbon		
10 pct Coatesville (21)	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. (60)		77.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)		7.75

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	81.0¢
6	4	2	6	—	96.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags... 7.4¢ to 9.0¢
Canadian sponge iron, del'd In East ..... 10.00¢
Domestic sponge iron, 98+% Fe, carload lots ..... 15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe ..... 42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe 53.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe 83.0¢ to $1.48
Aluminum ..... 31.5¢
Brass, 10 ton lots ..... 30.00¢ to 33.25¢
Copper, electrolytic..10.75¢ plus metal value
Copper, reduced ...10.00¢ plus metal value
Cadmium, 100-199 lb. .95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd $3.50
Lead .....7.5¢ to 12.0¢ plus metal value
Manganese ..... 57.0¢
Molybdenum, 99% $2.75
Nickel, unannealed ..... 88.0¢
Nickel, annealed ..... 95.0¢
Nickel, spherical, unannealed 92.0¢
Silicon ..... 38.5¢
Solder powder..7.0¢ to 9.0¢ plus met. value
Stainless steel, 302 ..... 82.00¢
Stainless steel, 316 ..... $1.10
Tin .....14.00¢ plus metal value
Tungsten, 99% (65 mesh).. $6.00
Zinc, 10 ton lots ..... 23.0¢ to 30.5¢

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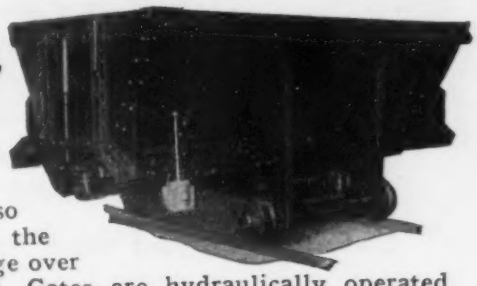
STORAGE BATTERY FLAT CAR

60-TON CAPACITY

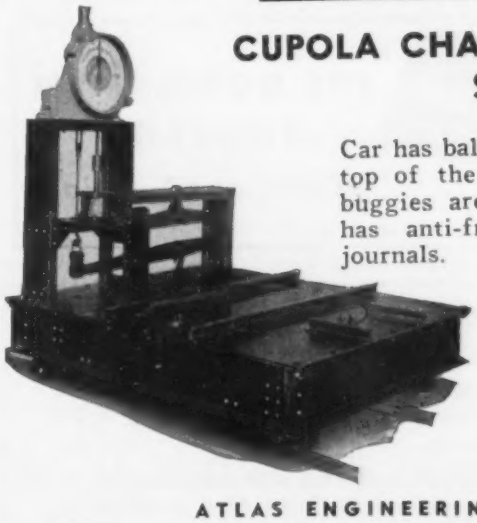
This self-propelled flat car operates on standard gauge track. Car provided with hydraulic electric brakes that can be operated by handwheel when long overhanging loads are encountered. These battery propelled cars are often provided with charging equipment mounted on car.

FURNACE CHARGING CAR, 8-TON CAP. CENTER DUMP



The discharge gates are so arranged as to spread the charge to the best advantage over the width of the furnace. Gates are hydraulically operated through a hand pump. Car is mounted on anti-friction roller bearings with spring mounted journals. Car provided with automatic engine couplers.

CUPOLA CHARGING SCALE CAR



Car has ball bearing steel turntable on top of the car upon which charging buggies are placed and weighed. Car has anti-friction bearings at main journals.

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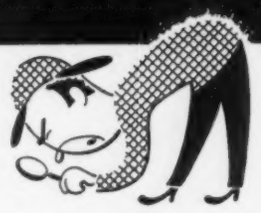

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ELECTRICAL SHEETS

22 Ga. H-R cut lengths

F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech-Bottom-15	.....	7.25	8.50	9.30	9.85	10.40	11.10
Brackenridge-28	.....	7.25	8.50	9.30	9.85	.....	.....
Follansbee-63	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Granity City-22	.....	7.95	9.20	.....	.....	.....	.....
Ind. Harbor-3	6.75	7.25	.....	.....	.....	.....	.....
Mansfield-75	7.25	7.75	9.00	9.80	.....	.....	.....
Niles, O.-64	7.05	7.55	.....	.....	.....	.....	.....
Vandergrift-1	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O.-4	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville-7	6.75	7.25	8.50	9.30	9.85	10.40	11.10

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si.			23.60

Foundry Ferrochrome

Contract prices, cents per lb of alloy. Noncontract prices add 2.50¢ per lb.

High carbon 8 Mesh and down.

62 to 66% Cr, 5 to 7% C, 7 to 10% Si.

Carloads, bulk	23.25
Carloads, packed	24.15
Ton lots, packed	27.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.10% max. C.	$1.14
0.50% max. C.	1.10
9 to 11% C.	1.06

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.00¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.20¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50¢
Less ton lots	17.75¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00¢
Ton lots to carload packed	19.00¢
Less ton lots	20.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

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- **Koppers Coatings provide a tough, impenetrable barrier to corrosive elements.**
- **Koppers Coatings provide up to 8 times the film thickness of conventional paint coatings.**
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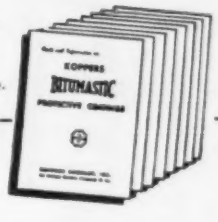

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Euclid Cranes are built in a range of styles and capacities to meet varied material handling needs. Write for information.

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78-82% Mn. maximum contract price, gross ton, lump size.
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont., Ashtabula, O.
F.o.b. Johnstown, Pa.
F.o.b. Sheridan, Pa.
F.o.b. Etna, Clairton, Pa.
$2.00 for each 1% above 82% penalty, $2.15 for each 1% below
Briquets—Cents per pound of briq delivered, 66% contained Mn.
Carload, bulk
Ton lots

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% 3% max
Palmerton, Pa.	$74.00	$75.6
Pgh. or Chicago	75.00	76.6

Manganese Metal

Contract basis, 2 in. x down, cents pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% ma Si, 2.5% max. Fe.
Carload, packed
Ton lots

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allow east of Mississippi, cents per pound.
Carloads
Ton lots
Less ton lots

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contr price, carloads, lump, bulk, delivered, lb. of contained Mn

Calcium Metal

Eastern zone contract prices, cents pound of metal, delivered.

	Cast	Turnings	Distil
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.35

Silicomanganese

Contract basis, lump size, cents pound of metal, delivered, 65-68% M 18-20% Si, 1.5% max. C. For 2% max deduct 0.2¢.
Carload bulk
Ton lots
Briquet, contract basis carlots, bulk delivered, per lb of briquet
Ton lots

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keok Iowa, or Wenatchee, Wash., $92.50 gr ton, freight allowed to normal trade ar Si 15.01 to 15.50 pct, f.o.b. Niagara Fal N. Y., $90.00. Add $1.00 per ton for ea additional 0.50% Si up to and includi 18%. Add $1.00 for each 0.50% Mn ov 1%.

Silicon Metal

Contract price, cents per pound co tained Si, lump size, delivered, for ton lo packed.
96% Si, 2% Fe
97% Si, 1% Fe

Silicon Briquets

Contract price, cents per pound briquet bulk, delivered, 40% Si, 2 lb S briquets.
Carload, bulk
Ton lots

Electric Ferrosilicon

Contract price, cents per pound co tained Si, lump, bulk, carloads, delivere

25% Si	20.00	75% Si	14.
50% Si	12.40	85% Si	15.
90-95% Si			17.

Low-Carbon Ferromanganese

Contract price, cents per pound Mn co tained, lump size, del'd, Mn 85-90%.

	Carloads Ton	
0.7% max. C, 0.06% P, 90% Mn	26.25	28.10
0.07% max. C	25.75	27.60
0.15% max. C	25.25	27.10
0.30% max. C	24.75	26.60
0.50% max. C	24.25	26.10
0.75% max. C, 7.00% max. Si	21.25	23.10

For other ferroalloys see May 24 issue, p.

no more GAMBLING on tool steel selection"

[⅓ actual size; Selector is in 3 colors]

...e's how it works:

...se the Selector, all you need know is the ...aracteristics that come with the job: type and ...dition of material to be worked, the number ...ieces to be produced, the method of working, ... the condition of the equipment to be used.

...R STEPS—and you've got the right answer!

1. Move arrow to major class covering application
2. Select sub-group which best fits application
3. Note major tool characteristics (under arrow) and other characteristics in cut-outs for each grade in sub-group
4. Select tool steel indicated

...t's all there is to it!

Here's an example:

Application—Deep drawing die for steel

Major Class—Metal Forming—Cold

Sub-Group—Special Purpose

Tool Characteristics—Wear Resistance

Tool Steel—Airdi 150

One turn of the dial does it!

And you're sure you're right!!

Since the first announcement, hundreds of tool steel users have received their CRUCIBLE TOOL STEEL SELECTORS. The comments received indicate that this handy method of *picking the right tool steel right from the start* is going over big.

"Handiest selector I've ever seen"

"No more gambling on tool steel selection"

"You're right, the application should dictate the choice of the tool steel" . . . and many, many more favorable comments.

You'll want your CRUCIBLE TOOL STEEL SELECTOR. It uses the only logical method of tool steel selection—begin with the application to pick the right steel! And the answer you get with one turn of the Selector dial will prove satisfactory in every case, for the CRUCIBLE TOOL STEEL SELECTOR covers 22 tool steels which fit 98% of all Tool Steel applications. ALL the tool steels on the Selector are in Warehouse Stock . . . that means when you get the answer, you can get the steel . . . fast!

Write for your Selector today! We want you to have it, because we know you've never seen anything that approaches your tool steel problems so simply and logically. Just fill out the coupon and mail. Act now! CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, N. Y.

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Dept. I, Chrysler Building
New York 17, N. Y.

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Company_____

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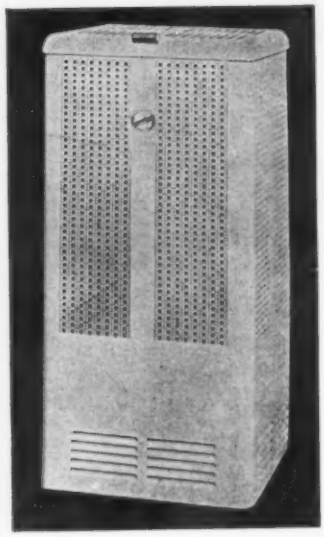
Hendrick Ornametal

TRADE MARK



Hendrick Ornametal is a decorative, lightweight metal grille suitable for a wide variety of applications, such as for stove panels as shown in the illustration.

Furnished in a wide variety of attractive designs, Ornametal is made of a special bright finish, cold rolled steel, suitable for painting or plating, and is available in a wide range of stock size sheets and gauges. Write for full information.

1876 - Seventy-Fifth Anniversary - 1951

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Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
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Sales Offices In Principal Cities

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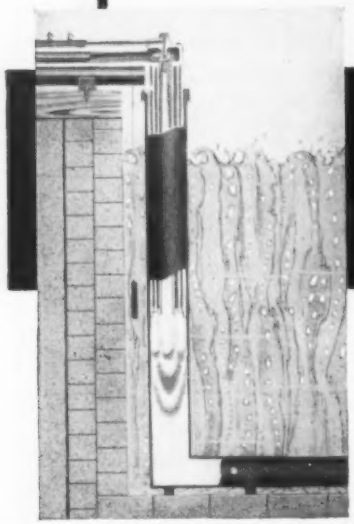
DIRECT FIRED
GAS BURNERS

FOR FASTER, CLEANER
LOWER COST

PICKLING



Exposed view of Submerged Combustion Burner installed directly into pickling vat. Automatically gas fired. Thermostatically controlled to keep acid at correct pickling temperature.

★ Flame burns below surface of acid—heats and agitates acid for faster, cleaner pickling.

★ Does not dilute acids—Highly corrosion resistant—Low operating and maintenance cost.

★ Install in present tanks, or add new vats without adding to boiler load. Burns any type gas —natural or manufactured.

Free *Send for descriptive booklet #41 and details*

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OF AMERICA, INC.
759 LOGAN STREET HAMMOND, IND.

Other Ferroalloys

Alsifer, 20%, Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
Carload
Ton lots
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo.
Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.
Ton lots
Less ton lots
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton
10 tons to less carload
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa. freight allowed, ton lots, per lb contained Ti
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti
Less ton lots
Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton
Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.
Openhearth $3.00-
Crucible 4.10-
High speed steel (Primos) 3.20-
Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b Langeloth, Pa.
bags, f.o.b. Washington, Pa., Langeloth, Pa.
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Carload, bulk lump
Ton lots, bulk lump
Less ton lots, lump
Vanadium pentoxide, 86 to 89% V_2O_5 contract basis, per pound contained V_2O_5
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk

Boron Agents

Contract prices per lb of alloy, del.
Borosil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B
Bortam, f.o.b. Niagara Falls
Ton lots, per pound
Less ton lots, per pound
Carbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B
14 to 19% B
19% min. B
Grainal, f.o.b Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1
No. 6
No. 79
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots
Less ton lots
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.
Less ton lots
Silcaz, contract basis, delivered.
Ton lots

PYRAMID TYPE PLATE BENDING ROLL
Capacity 1¼" X 12'

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Light and heavy machinery for all classes of sheet metal, plate and structural work.

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—PERFORATED—
TO YOUR REQUIREMENTS
SEND US YOUR DRAWINGS FOR PRICE
PERFORATED METALS
FOR ALL INDUSTRIAL USES
ALL SIZE AND SHAPE HOLES—ALL METALS
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Machine Corporation
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2873 cu. ft. Worthington 29 x 21" & 18½ x 21". Complete with Elec. Equipment
1480 cu. ft. Worthington 23" x 14 x 16". With 300 H.P. Syn Motor 4160/3/60

BOLT THREADING MACHINE
⅞" Acme 2-Spindle—With Landis Head

CRANES—OVERHEAD ELECTRIC TRAVELING
10 ton Case 100' Span 220/3/60. With two 5 ton trolleys

CRANE—ROUSTABOUT
Hughes Keenan Roustabout Crane Model MC-4 25' Gooseneck Boom, Mounted on Tractor. Equipped with pneumatic tires

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Industrial Brownhoist Type B Steam Locomotive Crane, 50' Boom. New Boiler installed 1946

CRANE TROLLEY
50 ton P & H Trolley with 15 & 37 H.P. Motors 220 volt 3 phase 60 cycle

FLANGING MACHINE
No. 6 Blue Valley Flanging Machine, Motor Driven With 15 H.P. 220/440 Volt AC Motor. Capacity ⅝" material from 30" to 20' flat heads and ¾" material 6' diameter or larger dished heads

FORGING MACHINES
2" AJAX New Model Forging Machine Twin Gear Drive, Belted Motor Drive, With A.C. Motor and Starter, Overhung Suspended Header & Die Slides

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15 to 25 ton Heroult Model V-12 Electric Melting Furnace, Top Charge hydraulically operated, Complete with Transformer Equipment

GRINDER
No. 72 Hanchett Vertical Surface Grinder Three Spindle 72" Rotary Table with Electrical Equipment

LATHE—TURRET
Gisholt Model 2L Turret Lathe, Motor Driven 15" Dia. 3 Jaw Universal Chuck, 4" Hole in Spindle. NEW 1942 or Later.

PLANERS
48 x 48" x 18' Cincinnati, Four Head
48 x 48" x 12' Niles-Bement-Pond, Four Head
60 x 60" x 12' Niles-Bement-Pond, Four Head
120 x 72" x 19' Betts, Four Head

PLANER—OPEN SIDE
60 x 60" x 18' Detrick & Harvey Three Head

PRESS—HYDRAULIC FORGING
1000 Ton United Steam Hydraulic Forging Press Quick Acting, Stroke (Daylight) 4'. Distance Between Columns FtoB 31", RtoL 72" Intensifier and Accumulator Included, also 8000 lb. Alliance Straigh Line Manipulaor. NEW 1942

ROLLING MILL
8 x 8" Standard Model 081 Two High, Complete Electrical Equip., Coiler, Uncoiler, Payoff and Takeup Reels
23" x 60" Mackintosh Hemphill Three High Breakdown Mill, Cast Steel Housings, Motor Driven Screw Downs, Complete with Pinion Stand, etc.

SHEARS—BAR
No. 14EF Pels, Belted Motor Drive. Capacity 1¼" Round, 1⅛" Sq. 3 x 3 x ½" Angles
No. O Hilles & Jones Guillotine Type. Capacity 1½" Round, 1⅛" Sq. 2½ x 2½ x ¼" Angles

SHEAR—ROTARY
#40A Quickwork, ½" Capacity. Circle Cutting Attachment & Elec. Equip. Included

TESTING MACHINES
10,000# Olsen Universal Wire Testing Machine
20,000# Southwark S10C Universal Hydr. Testing Machine
120,000 lb. SOUTHWARK-TATE-EMERY Universal Hydraulic Testing Machine. LATE
300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine

WELDERS
700 KVA Federal Flash Welder, Enclosed Rim Type, 440 Volt, Single Phase, Ring Sizes 6" to 35" Diameter x 12" Wide
40 KVA Sciaky Spot Welder, 36" Throat 440/3/60 operation

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The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINE

New York Market—Still in its summer doze, but made restless by a few inquiries for tools and equipment leaking in from out of town, the New York market nevertheless holds its underlying strong demand for late type machine tools. Unfortunately they are not easily turned up.

"Operation Speedtool" — N. A. Lougee, Inc., of 44 Pine St., New York City, is running "Operation Speedtool" to get used and new machine tools into the hands of aircraft industry contractors big and small.

Lougee explains that it is working on a contract with the Air Force on a flat fee. It serves as "program coordinator," sending out lists of machine tools needed for aircraft tooling up and production.

Lougee describes the tools it needs for contractors and asks prices. These are submitted to the customer. A few New York dealers have supplied tool information to the agency. Lougee describes results of its procurement program as "pretty good" so far.

OPS Assurances — Office of Price Stabilization has given assurances to members of the Used Machine Tools Industry Advisory Committee that it will consider carefully the group's objections to the pricing by weight clause in the order suggested by OPS.

This may sound the death knell for the pricing by weight idea. Certainly the industry showed itself dead set against it—although accepting the balance of the proposed order in principle.

Possibility for early issuance of the OPS order for used machines seems remote. Confusion over pricing of new machine tools must first be settled. One dealer remarked that when OPS gets ready to issue it the emergency will be over. The ban on rollbacks c tained in extension of the Defe Production Act may further st things up.

Why the Bottleneck? — So people cannot understand why aircraft program lags and w tooling schedules of other defe programs are upset because machine tool shortages while used machinery market resta during the summer.

One dealer explained that panding defense plants are on t lookout for late type equipme This modern stuff has become creasingly scarce in used machi circles. Even with the pinch machine tools hurting badly, t inclination to dig deeper into o er inventory is not shaping up well. Late tools, however, can sold as fast as they are unearth

Specialized Age — This tre was stronger during World War —but then machines that w reasonably recent then are clas fied as old now. Defense pla are also making more compl products with closer tolerance and need the services of new machine tools and in many cas specialized tools.

The urge for more efficient ma production has led the way to d sign of machine tools built f a single production step. It is i possible to put these machines the used market for general reas

On the Spot—How large a pa Detroit auto shops will play production of new machine too has not yet been definitely d cided. But the bottleneck on m chine tools puts them on the sp Some Washington people are favor of forcing the automake to produce complete assembli while others are more moderat merely insisting that Detroit tur out subassemblies.

Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

ed a distortion problem and increased the
e of large dies for blanking tank heads.

5 Cures Distortion arge Blanking Dies

ufacturer of water-heaters couldn't
o prevent an excessive amount of
ion in large-diameter forged rings
hardening steel for blanking out
for water tanks. Our distributor
ended A-H5 (5 pct chrome, air-
ing) tool steel because of its
resistance to distortion . . . and
ed features of high wear-resistance
ughness.

r A-H5 had been used for one
the records showed that besides
the distortion problem, the air-
ing grade had made possible a nice
e in production . . . and the cost of
l steel was no greater than before.
5 is an economical, general-pur-
rade—especially for tools and dies
ll for long wear, high resistance
ortion, and for extra safety in
ing.

Tool Steel Engineer Says:

There are good reasons for annealing tool steel

ool steel bars are furnished in the
ed condition. The annealing is done
o reasons:

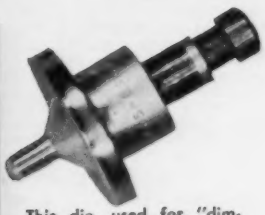
o remove the stresses in the as-
olled or as-forged bars which
ould otherwise lead to cracking.

o produce the lowest possible
ardness consistent with the best
achinability.

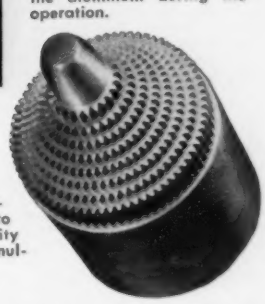
g the annealing operation, care
be used to avoid excessive scaling
ecarburization. The bell-type, con-
l-atmosphere furnaces used in our
eel mill are ideal for this purpose.
an far surpass the results obtained
ordinary annealing equipment.

TOOLS MADE OF 67 CHISEL WITHSTAND BRUTAL SHOCK

67 Chisel, used in this punch, absorbs plenty of shock in the forming of parts from 0.185-in. sheet steel.



This die, used for "dimpling" aluminum aircraft skin, is made of 67 Chisel and is heated electrically to 600 F so as to stress-relieve the aluminum during the operation.



Made of 67 Chisel, this intricate master hob is used to hob a mold cavity for die-casting a multiple gear.

As its name implies, 67 Chisel is primarily for shock tools . . . but chisels account for only a small proportion of its many applications. This chrome-tungsten steel has high shock-resistance, good red-hardness, and it is readily carburized for high wear-resistance.

67 Chisel is first choice for master hobs used in hobbing molds for plasties and die-casting work. It's often used for punches, swaging dies, calking and beading tools . . . heavy shear blades for cold work and for hot work up to 1000 F . . . and various shock and hot-work jobs such as studs and bolts for elevated temperatures, drop-forge die inserts, piercers, headers, and forming tools.

Carburizing produces a high surface-hardness that's reinforced by a tough, shock-resisting core. 67 Chisel has very high impact properties—about 175 ft-lb. That's really tough!

67 Chisel is a mighty versatile grade to keep in mind when you need tools that will stand up under heavy shock or high pressures; and it's especially recommended for tools having deep recesses, corners, slender shanks—wherever great strength is needed. You'll find it's an easy steel to machine and heat-treat.

67 Chisel is stocked in many sizes and sections in our mill depot . . . also by distributors of Bethlehem Tool Steels in principal cities.

Choose Tool Steel To Fit the Job

Shop men sometimes have deep-rooted ideas about tool steel that just aren't based on facts. The other day, for example, we saw a milling cutter made for a rather unusual machining job. The toolmaker had selected high-speed steel, figuring it would last longest because it was the most expensive and the most highly alloyed grade.

He made a poor choice, for the high-speed cutter produced only 18 pieces before it failed. One of our tool-steel engineers was called on to explain this disappointing performance. He recommended Bethlehem XX Carbon Tool Steel . . . and the first cutter made from it finished 175 pieces.

It's just another instance of the longer tool life made possible by selecting the right grade of tool steel for the job. Our technical staff is always ready to assist in selecting tool steels and in recommending the best methods of heat-treating.

Bethlehem ULTRASONIC TESTED **Tool Steel**

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